American Aviation

MANAGEMENT
ENGINEERING
PRODUCTION
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MAINTENANCE
EQUIPMENT

SEPT. 14

1953

Gilbert Perier
Board Chairman
SABENA 26

Production Cuts
Hit Combat Planes . 15

★

Subsidy to Drop
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Spanish Industry
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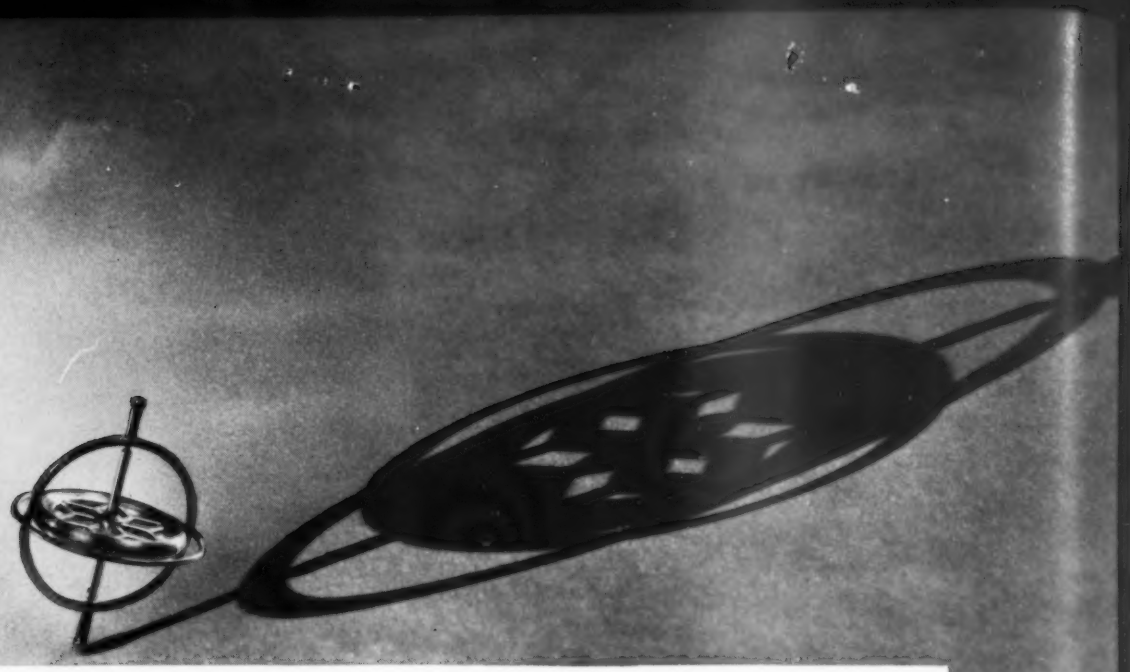

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Two basic aircraft production contracts are still hanging fire. One is production of the Chase C-123B's, pulled out of Kaiser Frazer's Willow Run plant by the USAF under Congressional pressure. Convair is leading contender for C-123B production in military services' effort to bridge gap between phasing out of B-36 and phasing in of supersonic XB-58 production.

Also under consideration is Lockheed, whose second source B-47 cutbacks at Marietta, Ga., have left space available. Lockheed Marietta is going into production on the turboprop-powered C-130.

Other contract still pending is second source production of Boeing B-52. USAF has restated its intention of designating a second source of production for the eight-jet intercontinental bomber.

The industry at large is wary of this contract because of extremely high cost of tooling for small scale production of the B-52. Kaiser/Chase fiasco with small scale production of Fairchild C-119 is still too vivid in industry's mind to make B-52 deal attractive, particularly in this era of close Congressional scrutiny of defense contracts.

•

Premature release of data on aircraft production schedules for fiscal 1954 caught U. S. Air Force and industry flat-footed. Apparently, a number of manufacturers got first definitive information on cutbacks in newspapers.

Result: No one really knows effect of cuts on their own operations.

Industry is still "going along with" Defense Department cut-backs. Even those manufacturers whose production has been specifically curtailed are playing down the effects of the cuts, cite them as "stabilizing" production.

With 965 aircraft cut from USAF program, engine manufacturers are bound to be next to get hit with stretch-outs or cutbacks. B-47 cut-backs alone will eliminate the need for almost 2000 General Electric-built J47 engines. Republic F-84F cuts will reduce Wright J65 requirements by 800-1000 engines.

Other engine manufacturers affected: Allison and Continental.

•

U. S. is half-way along in its program to up-date and enlarge its airpower, according to the Aircraft Industries Association. U. S. aircraft industry has produced more than 10,000 jet-powered aircraft. Since the start of the Korean War more than 22,000 military planes have been produced, and another 25,000 are on order for delivery by 1956. Current 12,000-plane annual production compares with 3000 in 1950 and 2150 average from 1946-1949.

•

Despite rumors in Washington that the Post Office will push for a re-evaluation of "service rates" for air mail, now that the PO is only paying the service pay portion of the total air mail bill, nothing is likely to come of it. Move would place PO in position of having to disprove equity of existing CAB authorized rates.

Current air mail service rates are high when compared with basic freight rates; normal compared with equivalent coach passenger rates; low compared with first class passenger rates.

The Washington View

The Funny Coincidence

The method and timing used to reveal the Air Force's plan to cut 1000 planes, costing nearly $1 billion, from current production schedules caused Pentagon officials considerable embarrassment. It was prematurely leaked and placed emphasis on the economy angle.

The disclosure just "happened" to be made the morning the American Legion convention was to vote on a critical resolution of Air Force budget cuts. Meantime, Defense Secretary Wilson was in St. Louis to address the convention. He said he was glad to learn of the decision, "which is entirely an Air Force matter." Wilson then devoted his speech to defending the administration's military budget.

Although the convention accepted a more amiable resolution urging the best possible Air Force, Wilson's deputy, Roger Kyes, did not brush the situation off lightly. Kyes, in Washington, burned because news of the cuts was leaked.

The Deputy Defense Secretary charged the leak was another Air Force pressure move. Maj. Gen. Sory Smith, USAF director of public information, was told his office was held responsible. Smith was called on the carpet for not releasing information earlier and not clarifying a number of misinterpretations. There was a stern warning from Kyes against a reoccurrence of such an episode in the future. "I'm sick and tired of these pressure moves from the Air Force," he said.

MATS Under Fire

In the aviation field, the Military Air Transport Service has come under increasing fire as a prime example of government competition with free enterprise. The hue and cry over MATS' activities has gained momentum because of the Eisenhower Administration's much heralded promise to get the government out of private business. Both the Administration and Congress are now moving toward this goal. Industry chips in when it can.

As it affects MATS, the first major step has been taken by the Congress. Currently, at least three Congressional committees are examining the joint Air Force-Navy operation. According to the House Appropriations Committee, MATS has overexpanded in its field of operations. It has been the committee's recommendation that MATS sharply reduce its activities.

The Chamber of Commerce of the United States claims "many activities of the Military Air Transport Service could well be eliminated." MATS was singled out by the group in its demand that "the government get out of the commercial transport business."

Where the Money Goes

A major concern in Congress is what the Air Force is getting for the money that has been appropriated. To find out, a number of senators plan an on-the-spot check of U. S. aircraft production facilities. Another group is already overseas on a similar mission. Because the Air Force budget this year stirred up such a rumpus, raising quite a few yet-to-be answered questions, the senators want to get a first hand appraisal. Information gathered will also be invaluable at next year's budget hearings, which are not too far off.

Sen. Homer Ferguson (R., Mich.), who heads the Senate Armed Services Appropriations subcommittee, has prepared an ambitious itinerary for the U. S. survey tour. Other members of the subcommittee are expected to join him, with the group probably leaving in late October. Also, it is expected that Sen. Ralph Flanders (R., Vt.) will make the trip.

Flanders, as a member of the Senate Armed Services Committee, sits in with Ferguson's subcommittee as an ex officio member. He is also a member of the Preparedness Investigating Subcommittee on aircraft procurement. Flanders has said he wants to "learn just what our actual plant capacity is, where it is located, and what the problems of expansion are or will be."

Meanwhile Sen. Francis Case (R., S. D.) is leading a three-member group of the Senate Armed Services Committee on an overseas inspection of Air Force bases in Europe and a tour of NATO countries. This group, which included Sens. James Duff (R., Pa.) and John Stennis (D., Miss.), will also look over sources of military off-shore procurement. They are being accompanied by W. H. Darden, former committee clerk who is now a professional staff member.

User Charges Back in View

Mel Brenner, a long-time employe of the Budget Bureau, is slated to get the top civil aviation job in the Commerce Department. He will be an assistant to Charles L. Dearing, newly appointed Deputy Under Secretary for Transportation.

While with the Budget Bureau, Brenner was credited with seeing that the President's annual budget message to Congress carried a request for Federal airway user charges. He will undoubtedly renew his campaign in the Commerce Department, and it will not necessarily be from scratch. There is already considerable sympathy in the Department for an imposition of user charges.

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OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. $200 per year. Managing Editor: Keith Saunders.

American Aviation Directory; twice yearly listing of products, people and organizations. $7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. $13.50 per year in USA and countries belonging to Pan American Postal Union, including Spain and the Philippines. $15 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

American Aviation Traffic News incorporating Air Tariff Reports): Daily rates and tariff news. $150 per year. Managing Editor: Wallace I. Longstreth.

Where & When

Sept. 14-16—ATA, Rates & Tariffs Committee, Laurentides Hotel, Ste. Agathe, Quebec.

Sept. 21-25—Instrument Society of America, 8th National Instrument Conference & Exhibit, Chicago.

Sept. 22-24—Aircraft Spark Plug & Ignition Conf., Champion Spark Plug Co., Toledo, Ohio.

Sept. 27-29—Int'l Northwest Aviation Council, 17th Annual Conference, Gearhart, Oregon.

Sept. 28-30—National Electronics Conference, 9th Annual Meeting, Hotel Sherman, Chicago.

Sept. 29-Oct. 3—SAE, Aeronautic Meeting & Aircraft Engineering Display, & Aircraft Production, Hotel Statler, Los Angeles.

Sept. 30-Oct. 1—AIEE, Aircraft Electric Equipment Conference, Seattle.

Sept. 30-Oct. 1—Air Traffic Conference, Cargo Advisory Board, San Francisco.

Oct. 1-3—Air Reserve Assn., Annual Meeting, Angebilt Hotel, Orlando, Fla.

Oct. 10-17—5th Annual All-Texas Air Tour. Information from Texas Aeronautics Commission, Walton Bldg., Austin.

Oct. 13-15—Air Transport Association, Annual Engineering & Maintenance Conf., Saxony Hotel, Miami Beach, Fla.

Oct. 14-15—New York State Dept. of Commerce, Annual Airport Development & Operation Conference, Onondaga Hotel, Syracuse.

Oct. 14-16—AIEE, 6th Annual Special Conf. on Machine Tools, Hotel Cleveland, Cleveland, O.

Oct. 15-16—Aircraft Electrical Society, 10th Annual Display Mtg., Pan-Pacific Auditorium, Los Angeles.

Oct. 19-22—ATA, Purchasing Committee, Saxony Hotel, Miami Beach, Fla.

Oct. 22-23—Radio Technical Commission for Aeronautics, Fall Assembly, Sheraton Park Hotel, Washington, D C.,

Oct. 28-30—Southeastern Airport Managers' Association, Annual Convention, Marlin Beach Hotel, Fort Lauderdale, Fla.

Oct. 29-30—National Business Aircraft Assn. (formerly CAOA), 6th Annual Forum & Meeting, Park Plaza Hotel, St. Louis, Mo.

Nov. 3-4—Transport Aircraft Hydraulic Conference, sponsored by Vickers, Inc., Park Shelton Hotel, Detroit, Mich.

Nov. 3-6—National Association of State Aviation Officials, Annual Meeting, Edgewater Gulf Hotel, Edgewater Park, Miss.

Nov. 5-6—SAE, Fuels & Lubricants Meeting, Conrad Hilton Hotel, Chicago.

Nov. 16-17—American Society for Quality Control, Aircraft Quality Control Conf., Biltmore Hotel, Dayton, O.

Dec. 3-5—7th annual Arizona Aviation Conference, Yuma, Ariz.

Dec. 17—17th Wright Brothers Lecture (sponsored by IAS), U. S. Chamber of Commerce Auditorium, Washington, D. C.

INTERNATIONAL

Sept. 7-18—IAS-RAES, 4th Int'l Conference, London, England.

Oct. 5-10—IATA Annual Assembly, Montreal, Canada.

Oct. 10—International Air Race, England to Christchurch, N. Z.

Nov. 1-22—IATA, Traffic Conferences, Honolulu.

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Letters

Airline Heads Speak Out on Coach Travel

Two editorials appearing in the August 3 issue of AMERICAN AVIATION*—one criticizing air tourist service in Europe and the other noting that the British are ignoring Prestwick Airport as a European gateway—have drawn comments from three top European airline heads. Because of the recognized standing of these authorities, applicable portions of their letters are presented below.*

To the Editor:

With characteristic verve—so widely appreciated—in your Editorial "Jottings from a Notebook," of August 3rd, you pitched hard into the European airlines for their introduction of tourist fares. You indicated that they were a flop, added that, "the whole idea was impractical and ill-conceived to start with" and said that the European airlines don't know their missions or their markets.

Maybe we don't. We are certainly always learning and since we have been in the air transport business as a nation only since 1919 we are inclined to agree with you that we are still inexperienced—at least compared with the railway and canal-barge "boys of the old brigade."

But there are one or two facts on which we are cutting our teeth—when we have any left from grinding them and other troubles. First, a background from the winter of 1952/3, when we in BEA experimented with a cut fare between London and Glasgow and between London and Edinburgh. The fare reduction was 33%. Public reaction was outstanding. During the five months from November 1952, the number of passengers carried increased by 156% from 12,300 to 31,200. That isn't mass travel but it is a lot more massive than it was before. In all, as a result of the lower fare, we were some £45,000 ($126,000) better off than we should have been on estimated traffic had the fare remained unchanged.

More recently, a BEA traffic comparison between June, 1952, when tourist fares were not in operation, and June, 1953, when they were, shows a 34.7% increase on international traffic out of London—from 22,726 passengers to 30,598 passengers.

Our so-called tourist fares between the U. K., France, Switzerland and Italy seem to have had a real impact. For instance, BEA's July results on four key routes were as follows:—

July 1953 Traffic Compared with July, 1952

London/Zurich	136 per cent increase
London/Geneva	107 per cent increase
London/Milan	58 per cent increase
London/Nice	48 per cent increase

Can it be that you have been hearing complaints from some of our friends and competitors who have not done so well, partly because of BEA's highly competitive new fleet of Elizabethans and Viscounts, and partly because of varying fare reductions?

We deliberately went after the greatest reductions on the major tourist routes, such as from the U.K. to France, Spain, Switzerland and Italy. We, and other carriers, have been this summer too short of first-class modern aircraft for the tourist fares to be extended at substantial reductions to other parts of Europe such as Scandinavia, Germany, Belgium and Holland.

The increase of 34.7% in our passenger carrying for June, 1953, compared with June, 1952, comes in great preponderance from additional passengers carried south from the U.K. Fare reductions made on routes to the east and northeast have not been sufficient this year to create substantially increased traffic.

Taking the standard class fares operative in 1952 as the basis, the following percentage fare reductions were agreed at Cannes for tourist services:—

United Kingdom to:

Italy	25-30%
Spain	18-21%
France	16-21%
Switzerland	20%
Malta	32%
—and consequently all fares U.K. to North Africa routed over Malta, more than	25%
Scandinavia	12.5%
Germany	11.5-12.5%
Belgium	9.0%
Holland	8.5%

Air passenger traffic into and out of London represents 40% of all European air traffic and the five major European airlines (excluding BEA) derive 30% of their total European traffic from their carryings into and out of London.

Therefore, our competitors on the east and northeast routes probably do not at present regard the tourist experiment as a success. However, with our aircraft fleet constantly improving in type and strength, we are now looking forward to fares on the east and northeast routes which will get much more traffic into the air in those directions as has happened in the U.K. domestically and on the southward routes.

Certainly we in BEA are all out for tourist fares on the basis of such experience as we now have with them. They are neither a flop nor a disappointment but a real success—both travelwise and economically.

I do agree with you, however, about the neglect of the first class traffic. There just have not been enough of the first class airplanes to go round. Next year there will be and we shall introduce many new first class services on major routes in addition to more tourist services as well.

A further fact is that the European pattern of services is complicated and very closely knit. A fare between London and Rome is available via Brussels and Amsterdam and the carriers on indirect routes compete vigorously for a share of the direct traffic. A tourist service between London and Rome therefore called for tourist services from London to Brussels and Amsterdam and also from Brussels and Amsterdam to Rome. Tourist fares from Paris to Switzerland and Italy, when combined with the local fares to points north—Brussels, Amsterdam and Scandinavia—offered substantial undercuts to the ex-

Masefield Norlin Berchtold

Facts hard enough to cut teeth on.

tting fares and threatened major traffic diversions and so, again, tourist fares nd services were introduced on routes here there was no other immediate justification for them.

Thus the tourist service pattern pread widely and quickly on integrated outes and, because few carriers had the equipment to enable them to operate both first and tourist services, the first class service virtually disappeared for this summer. That this was a bad thing will be readily admitted by all the European airlines. Both the missions and the markets will see that they come back with new aircraft in 1954.

There are so many Scots in England—and BEA—today that we couldn't forget Prestwick even if we tried. BOAC has 15 flights a week between Prestwick and London on their trans-Atlantic services. We in BEA serve Glasgow—a city of more than one million inhabitants. Renfrew Airport is not only 24 miles nearer to Glasgow than Prestwick, but we have at Renfrew one of our two maintenance bases.

Obviously we shall be glad of such interline business as the development of Prestwick may bring. But Prestwick generates no significant amount of local traffic of its own and the trans-Atlantic carriers obviously cannot guarantee such punctuality as would give certain connections with originating connecting domestic services.

Sincerely yours,
PETER G. MASEFIELD,
Chief Executive
British European Airways
Lower Regent St., S.W.1
London, England

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To the Editor:

The low-fare, high-density scheme has not been the success expected in European traffic. The reason for that seems to be that the traffic potential in Europe is not as big as in the United States, and that the rate reduction for tourist class in European traffic has been too small to reach a broader market. Further, it has been a mistake to practically abandon the first class traffic for the benefit of tourist class.

On several routes only tourist class has been available to the public. The result has been that passengers who have been prepared to pay for a first class ticket have been forced to travel tourist class. The air carriers have as a result to a great extent been carrying a public prepared to pay a higher rate for less money without reaching the new market so very much needed. Because of the excellent overnight train connections in Europe, the first class passengers are tending to use train services rather than air transportation.

Further, I think a great mistake has been made in reducing the free baggage allowance for tourist class from to 15 kg per passenger. In several cases it has been cheaper for a passenger in tourist class to buy a first class ticket, when such service was available, to get 5 kg more free baggage. The baggage question is of great importance in European traffic, as the European passenger travels with more luggage than the American.

The name "Tourist Class" has not been the right label for the services rendered in Europe. The name as used has tended to scare off our first class clientele in the belief that the services offered are cheaper than the services

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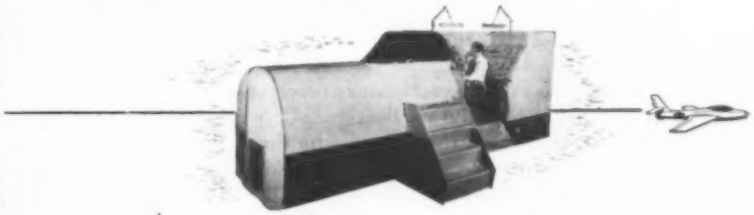

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they desire to buy, and at the same time the price tag has not been cheap enough to reach the so-called tourist class market. Actually, the present European tourist class service should have been called "Standard" and the first class service "De Luxe."

Even if on the European tourist class traffic many more passengers have been transported than ever before, many European air carriers have not obtained the increase in revenues they expected, and in some cases they may even have had less revenue than the last year. I can therefore envisage . . . first class being introduced to a greater extent on many of the European routes.

Certainly tourist class will be maintained, but it will be built up in a more careful way than during this last season. . . . Tourist class rates must be lower and offered to the public on real night services or during off-season periods.

Speed is certainly of great importance in the competition with the very good ground transportation facilities in Europe. Today the time the air passenger has to spend on the ground is much too long and every possible effort has to be made to cut it down . . . 45 to 60 minute stops are today normal with the result that on short distance flights the passengers spend more time on the ground than in the air.

PER A. NORLIN
President

Scandinavian Airlines System
Bromma Airport
Stockholm 40, Sweden

•

To the Editor:

Results of the tourist service within Europe were disappointing in the early part of the season but they were quite good in July and August.

We do get complaints from those passengers who want more comfort, and who used to get that comfort before we installed high density seating.

Once you have started tourist service it is difficult to stop it. We cannot re-instate first class service completely. But there is a possibility in using mixed service, i.e., first class and tourist class in the same airplane. We have experimented with this on Swissair. We would like to try a mixed service on our London run.

We have tried operating two types of service on the same run, but the load factor on the first class service dropped when we added a tourist service. We are operating two types this summer on the Zurich-London route.

Some tourist fares may have been too low. For one thing the differences between day and night coach fares was too small. So I believe day fares might be increased a bit and night fares lowered. Night operations are most important to European carriers in order to get utilization. We believe night, early morning, and late evening flights should be increased.

It is impossible to obtain sufficient utilization by operating two types of services, such as first and tourist, during the daytime.

On the whole we cannot go back to first class except on a few lines.

DR. WALTER BERCHTOLD
President

SWISSAIR
P. O. Box 929
Zurich, Switzerland

SELLING COSTS

To the Editor:

Your article in the August 3rd issue on limitation of sales expenses for U. S. trans-Atlantic carriers was excellent. However, it is my opinion that the most important factor for a logical stand on the part of the American-flag international carriers was omitted.

It is an understandable and commendable thing for a governmental body operating under the aegis of an economy-minded administration to pursue every last alley as a means of reducing public expenditures and keeping a watchful eye on tax dollars which might be earmarked for mail pay; however it is inexcusable if this economy-mindedness is allowed to run rampant and becomes arbitrary and harmful to the interests of American industry.

A closer look at the trans-Atlantic route structure will show emphatically that the American-flag international carriers are, in the majority of cases, competing with foreign carriers that are government-owned and operated. Governmental absorption of operating deficits on the part of these foreign carriers has been a major impetus in forcing American-flag international carriers into higher percentages in ratio of sales expenses to revenue. Surely the CAB is not shortsighted enough to stifle competitive initiative at the expense of its own carriers.

How can a responsible body such

(Continued on page 85)

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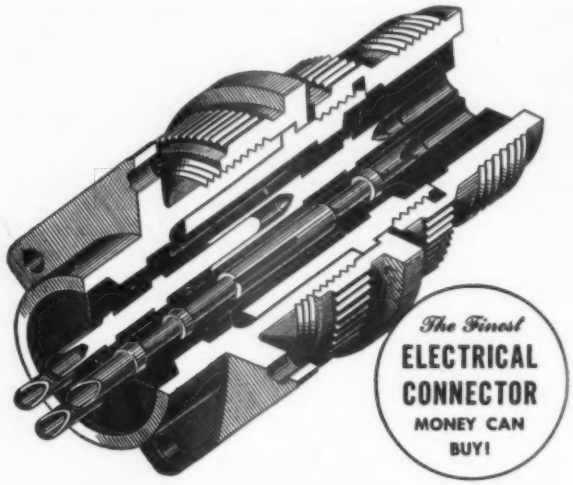

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AFA's 'Fresh Look' Appeal

ALL OF those aviation organizations which turn out reams of resolutions once a year and all of those strictly partisan organizations, such as the Navy League, should take this occasion to examine the statement of policy approved by the seventh annual convention of the Air Force Association in Washington late last month.

by W. W. P.

Here is a statesmanlike doctrine for air power which stands high above the petty service rivalries which temper so many similar policies. Here is a working program for the good of the services and the nation which speaks not only with unaccustomed clarity about air power requirements in the H-Bomb era, but offers concrete proposals by which air power can be implemented.

The Air Force Association has emerged since World War II as a new and potent influence on behalf of air. Under the leadership of its retiring president, Arthur F. Kelly, vice president of sales for Western Air Lines, its convention in Washington included a one-day air power symposium of impressive stature. AFA can be proud of its youthful record.

What is AFA asking for? It wants more than the "fresh look" at our military effectiveness now being undertaken by the Joint Chiefs of Staff. It wants a "fresh look" at our weapons evaluation system by experts independent of any of the individual services. It wants a new independent air power commission composed of outstanding civilians completely free of military influence and control to pass on the findings of the JCS and provide the nation with a new competent and effective evaluation of our entire military enterprise.

This is a sound program.

Take weapons evaluation, for example. "The JCS need professional help with this part of the job —help which ordinarily should come from the Weapons Systems Evaluation Group," AFA says. "Unfortunately, this segment of the Department of Defense has not been uniformly objective or effective in all of its studies; further, all of the military services have either prevented objective evaluation of their weapons or have failed to implement the results of sound evaluations."

AFA believes that this situation is likely to continue so long as the Weapons Systems Evaluation Group remains in the Department of Defense and is dominated by military men. We concur most heartily.

So AFA proposes that an independent commission of leading civilians, similar to the President's Air Policy Commission of 1947, be established to provide an objective evaluation not only of weapons but of our military effectiveness. Such a group should have access to the findings of the JCS and to scientific testimony. It should be non-partisan and its directive should be broad in scope.

But a new commission is only a start, AFA believes. It recommends the establishment of a permanent organization devoted to the formulation and review of national strategy, and a continuing evaluation of our military effectiveness. It should be guided by a group of eminent citizens "and kept completely free of military influence or control. It should be financially and politically independent of pressure by any branch of government. It should be financially strong enough to attract and retain the best non-partisan thinkers in the nation."

We have given the AFA statement of policy attention on this page because we believe this organization, almost alone, is striking at fundamentals in our military program. Not only do we need a "fresh look" at our entire military enterprise, but we should stop expecting military leaders to serve as economists and stop expecting our civilians to serve as strategists. We don't permit anyone to be defendant, counsel, jury and judge all at the same time. But we have been expecting (or permitting) uniformed officers to be strategists, economists, industrialists and financiers all at the same time. Developing the best military program for the nation can't be performed that way. We like AFA's broad policy approach and advocate its adoption.

Welcome Zurich

The writer of this page was privileged to be one of the few officially invited guests from the U. S. to the formal opening of the big new Kloten Intercontinental Airport at Zurich, Switzerland, August 28-31. He was also privileged to carry to the officials of the Canton of Zurich the congratulations of President Eisenhower on the completion of what is, without any question, one of the finest airport facilities in Europe and the world. It is impossible to describe in words the pride and enthusiasm of the public of Zurich in their airport. Something like 250,000 persons witnessed the well-run air show which comprised part of the opening formalities. Guests from over 20 countries were royally entertained. The whole affair was operated with the type of precision for which the Swiss are noted. Zurich's new airport is a welcome new addition to the world's airways.

. . . WAYNE W. PARRISH

Reading Aviation Now Has *GREAT, NEW* Cities Service Aviation Oil KOOLMOTOR AERO

Reading Aviation Service, famous throughout the industry for quality aircraft maintenance, skilled craftsmanship and thoroughness, now services aircraft with Aviation's Newest and Greatest engine oil . . . Cities Service Koolmotor Aero. New Koolmotor Aero, refined from the "heart-cuts" of only the finest crudes, contains an *exclusive Cities Service Anti-Oxidant Additive* that provides these great features:

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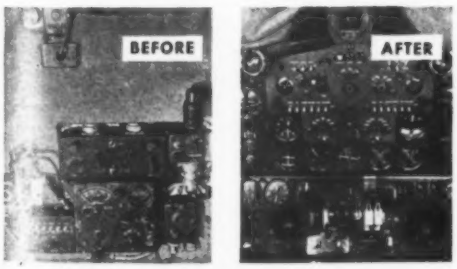
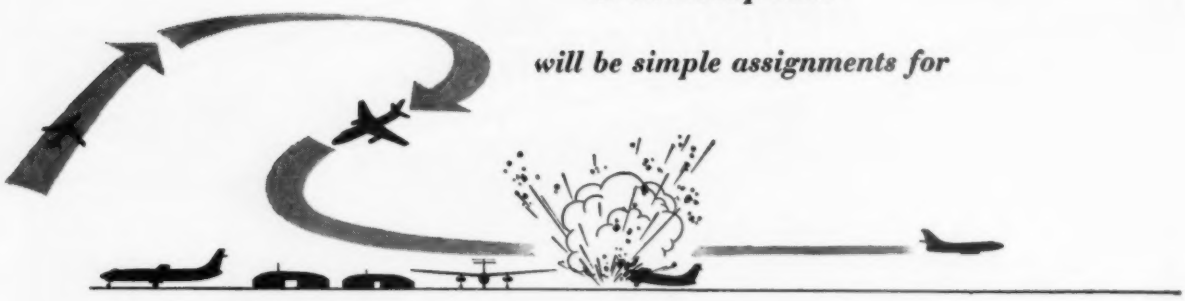


ORDINARY INSTALLATION VERSUS RAS INSTALLATION... On the left is an ordinary installation of a $29,000 "drive and control center." On right, same equipment "custom engineered" by RAS specialists. RAS complete facilities include main hangar handling twenty-five planes "in work" at one time, complete radio and electronics service center, most modern equipment for engine and accessories overhaul.

Bombs from eight miles up

or at treetop level

will be simple assignments for



–the new Douglas B-66B

A versatile new Air Force bomber now moves from Douglas drawing boards toward service. Construction of the first B-66B is under way.

Twin jets, slung outboard on the wing will put B-66B in the 600 to 700 mph class, while special design will permit wide selection of bomb combinations for varied missions. Even with full bomb load, B-66B's efficient power-to-weight ratio will give ample range to travel far over enemy territory, and return. In speed, range and capacity it will be built to meet tactical requirements for delivering the most potent weapons in the nation's defense arsenal.

The design of B-66B is another example of Douglas leadership. Planes that can be produced in quantity to fly *faster and farther with a bigger payload* are a basic concept at Douglas.

Enlist to fly in the U. S. Air Force

Depend on *DOUGLAS* **First in Aviation**

Industry Spotlight

Flying the Navy Douglas D-588-2 Skyrocket, Marine Lt. Col. Marion E. Carl set a new unofficial world altitude record of 80,235 feet on August 31 at Edwards AFB, Calif. Carl was testing a new Navy high altitude suit at the time of the record flight. Previous record was 79,494 feet set by Bill Bridgeman in the same plane on August 15, 1951.

•

Hughes Aircraft Co. development work on direct-view storage display tube promises to eliminate one major bottleneck in commercial airborne weather radar availability. Company recently announced plan to set up model shop production of one tube a week within the next three months, and to produce one tube per day sometime in 1954.

•

Decision by Petroleum Administration for Defense to rescind two-year old order forcing the airlines to use avgas with high tetraethyl lead content was greeted with mixed reactions by the airlines. Although they are pleased with the availability of the improved fuel, they are concerned over reports that the fuel companies will hike gas prices to cover increased refining costs involved in lower lead fuels. Airlines did not get a price break when the previous switch was made.

•

"Bargain prices" for jet engines have arrived, according to Lockheed Aircraft Corp., which claims that engines such as those in the F-94C cost only $2.56 per horsepower, compared with $50 per horsepower for the average diesel engine. Lockheed figures, presumably on the Allison J33-29 engines, are based on engine-plus-afterburner.

•

The U. S. Air Force has completed phase VI tests on the swept-wing Republic F-84F at Edwards Air Force Base after logging approximately 1300 hours on the airplane during accelerated service tests that started on May 29. The plane has been returned to the USAF inventory.

•

Take-off weight of the de Havilland Heron I and II has been increased from 12,500 to 13,000 pounds. This enables a given payload to be carried about 250 miles further than before, or 500 pounds more payload for a given stage length. Maximum landing weight remains unchanged at 12,500 pounds.

•

American Airlines is scheduled to get its first Douglas DC-7, powered by Wright Turbo-Compound engines, this week. The plane, which will be used by AA for training and familiarization flights, is the Number 3 DC-7. The fourth ship will also go to AA shortly after No. 3 and will be used for pilot training prior to DC-7 certification. Certification tests are going along on schedule.

•

Allison J35 jet engine production has been virtually cut in half in recent weeks as a result of the phasing out of Republic F-84G production, according to officials of Allison-Aeroproducts Division of General Motors. Although the J35 is also used in the Northrop F-89D Scorpion, the later Republic F-84F is using the Wright J65 Sapphire engine.

•

Douglas has completed the first flight test on the initial production model AD5. . . . Convair has started flight testing its first T-29D at San Diego.

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New type carpet cleans easier, cuts noise and vibration

DRY CLEANING used to be the only answer to spilled foods and liquids, muddy shoes, scraping feet that give flight rugs a beating. And wool carpeting soon wears out from repeated dry cleaning.

Then B. F. Goodrich developed washable carpeting—covered with Avtrim and backed with fabric and sponge rubber. It resists grease, oil, fire and all ordinary stains and chemicals. Spilled materials don't soak in, are easily wiped up. Occasional cleaning with soap and water makes it sparkle like new. No need to remove the carpet from the plane. And now airlines are finding still another advantage: the sponge rubber backing cushions engine noise and vibration.

Avtrim is also practically immune to scuffs and scratches, shows scarcely a sign of wear after many trim materials would have gone to pieces. Fits skin-smooth over curves, won't wrinkle with age.

Newest development is embossed Avtrim: patterned, colored fabric covered with transparent finish. B. F. Goodrich can supply it in any pattern and color to match practically any decorative scheme. Delta–C. & S. Air Lines are using it for rugs in their new Lockheed Constellations. They also use Avtrim for walls, headlinings, baggage racks and arm rests.

Other B. F. Goodrich products for aviation include: tires, wheels, brakes, heated rubber; De-Icers; Plastilock adhesives; Pressure Sealing Zippers; fuel cells; canopy seals; Rivnuts. *The B.F.Goodrich Co., Aeronautical Division.*

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ESTABLISHED JUNE 1, 1937

World's Largest Aviation Publishers
American Aviation

VOLUME 17, NO. 8

HARDEST HIT by latest cut-backs is Boeing B-47, shown above during in-flight refueling.

New Production Cuts Hit Combat Aircraft

F-84 fighters and B-47 medium bombers hardest hit in slash; efficiency, not economy, claimed motive.

By HARRY S. BAER, JR.

ELIMINATION of 965 aircraft from Air Force procurement plans has pinpointed two distinct possibilities that may be in store for the nation's airpower. Either the reductions mean an all-out economy effort to the tune of about $750 million, (the AF emphasizes that they don't) or they indicate a trend toward investing currently available funds in more modern aircraft.

Backing up the former possibility is Defense Secretary Charles E. Wilson's statement, which closely followed announcement of the cuts. He said, "It encourages me that [AF officials] are starting to be effective from an economy viewpoint. . . . It takes courage to stand up and stop a thing that already is moving along, just to save money." Wilson also noted the plane slashes were "made on the initiative of the Air Force itself."

On the other hand, Acting AF Secretary James H. Douglas, Assistant AF Secretary Roger Lewis, and other top AF officials maintained that the procurement revision was not based on "any financial policies and was not a result of a search for savings." They point out that the reductions would not adversely affect delivery of modern combat aircraft required to equip 143 wings, in case a force level of this proportion is reconfirmed by the Joint Chiefs of Staff.

In a tone more optimistic for future air strength, Douglas announced that the AF has ordered more North American F-100's, supersonic advanced day fighters which are in line to some day take over AF fighter chores now handled by North American F-86's. In addition, and perhaps even more significant, is Douglas' disclosure that the AF is considering creating a second source for production of the eight-jet B-52 Stratofort, now in the initial production stage at Boeing Airplane Co., Seattle, Wash. Mention of increased emphasis on these advanced types could well mean the AF wants to move ahead more rapidly in obtaining more effective aircraft at the expense of cutting down on current fighter and bomber models.

Bearing the brunt of the 965-plane elimination in procurement plans announced at the Pentagon on September 3 were 151 B-47 Stratojets under contract with Boeing at Wichita, Kans., Lockheed at Marietta, Ga., and Douglas at Tulsa, Okla., since these were the only aircraft in the 965 that were actually on order. Douglas said that most of the B-47's would be cut at the Lockheed and Douglas plants, indicating that Boeing at Wichita will not be greatly affected. Due to the reduction, there is a likely possibility that B-47 costs per plane will increase, although the increase might not be much, since the Marietta and Tulsa plants have not yet gone into full production.

"This reduction will be spread among the three plants and production has been rescheduled on a basis which will not delay the planned build-up of B-47 wings, but will permit the Air Force a longer reorder capability at all three plants," Douglas explained. Reliable sources report that this means the B-47 program will be stretched out some 15 months.

Although the Air Force declined to reveal a complete breakdown in figures and aircraft companies involved in the cutbacks, here is the reported distribution of the 965-plane total:

SECOND SOURCE may be set up for the eight-jet Boeing B-52.

• **155 B-47 jet bombers** (these include the 151 under contract);

• **14 RB-47** jet reconnaissance planes;

• **404 Republic F-84F** fighter-bombers (this figure could be higher if newly announced F-100 orders were calculated into the reductions);

• **175 North American F-86F** fighters;

• **66 Beech T-34** primary trainers;

• **141 Lockheed T-33** basic trainers;

• **10 Sikorsky H-19** helicopters;

Aside from the 151 ordered B-47's, present production schedules of other type aircraft on the elimination list will not be affected, Lewis noted. This is because they have been taken off the "tail end" of long range procurement planning without affecting similar types already ordered.

Among the reasons given for the procurement revision downward were (1) lower than anticipated aircraft accident rates, (2) adjustment of combat attrition rates through current cessation of Korean fighting, and (3) shift B-47 training responsibility from Air Training Command to Strategic Air Command. The term "over procurement" has also been mentioned frequently in the Pentagon.

What will actually happen to the estimated $750 million earmarked for these airplanes is the big question. The AF still has the money and it can use it this year, even to buy more B-47's if it changes its mind. But most likely it will be held over until fiscal 1955. If included in next year's budget, it would certainly appear to be a real saving for the U. S. Treasury.

In the wind is a somewhat similar production rescheduling of aircraft engines. The jet engine program is now undergoing a general survey to "make sure the right engines are being produced," according to Defense Secretary Wilson.

When east coast aircraft manufacturers met with Lewis on September 2 to talk about the aircraft procurement reductions, top officials from Allison, General Electric, Curtiss-Wright, and Pratt & Whitney were present. Lewis, in a quick west coast trip, had informed manufacturers out there of the aircraft cuts on August 31. • • •

LARGEST NUMBER of cutbacks came in Republic F-84F's.

CAB Issues 1953 Report On Subsidy Separation

The 1953 version of CAB's subsidy separation report has been issued, indicating that $80,655,000 will be paid domestic and international airlines in subsidy for the current fiscal year. At the same time, $56,070,000 will be paid the airlines in service mail pay, with the total bill amounting to $136,725,000.

Next year CAB foresees a reversal in the trend of the past three years, which has seen the subsidy bill swing upwards each year from $70,559,000 in fiscal 1952.

The new CAB report this year also has a special significance, since it will serve as the basis for separate service payments by the Post Office and subsidy payments by the Board, under President Eisenhower's Reorganization Plan No. 10, which, on October 1, transfers subsidy payment responsibility from the PO to CAB.

Also, although CAB has the final say on how much mail pay an airline will receive, the PO, it is rumored, will petition CAB on or about October 1 to reopen the current final mail rates of some or all carriers. This would render rates contained in CAB's new report not only temporary, but subject to overall retroactive adjustment.

Subsidy Bill

The subsidy bill for the current fiscal year (1954) is $9.5 million higher than CAB last year estimated it would be. Chief recipients of subsidy this year will be the international, overseas, and territorial carriers, which as a group will get $50,854,000. Next are the local service carriers, who will be paid $23,895,000 in subsidy.

The domestic trunk-line industry, of which nine carriers are considered completely free of subsidy, will receive a total of $3,581,000, distributed among Braniff, Continental, Northeast, and Colonial.

Newcombers to the subsidy bracket in fiscal years 1954 and 1955 are the certificated helicopter lines, which previously were considered by CAB as receiving only service mail pay. Because the PO will now have the responsibility of paying service rates only, CAB found it necessary to break up helicopter payments into service and subsidy components. Accordingly this year that segment of the industry will get $2.3 million in subsidy and next year $2.5 million.

Eight booster rockets, in pairs, fall away from British guided missile after take-off. Missile reaches speed of approximately 2000 mph.

USAF Weighs Bids on Chase C-123 Production

The Air Force is expected to reach a decision on whether or not to build the controversial Chase C-123 assault transport by the end of this month, following a study of bids submitted by four companies on September 10.

The Air Force had invited North American Aviation, Inc.; The Glenn L. Martin Company; Consolidated Vultee Aircraft Corp.; Lockheed Aircraft Corp.; and Willys Motors, Inc. to submit bids on "possible" production of the C-123.

Willys Motors, a subsidiary of Kaiser Motors, which originally had a contract to build the transport, notified the Air Force that it would not submit a bid because of its recent leasing of about one-third (1,600,000 square feet) of Kaiser's Willow Run, Mich., plant to General Motors Corp. for production of Hydra-Matic transmissions.

PAC Gets Contract For C-54 Overhaul

An Air Force contract valued at $5 million for the overhaul and modification of an undisclosed number of Douglas C-54 aircraft has been awarded to Pacific Airmotive Corp. The new contract represents the fourth and largest received by PAC since it inaugurated its Chino, Calif., base in 1950.

Thomas Wolfe, president of PAC, commenting on the new award, said it established the company as the only private maintenance agency engaged in rebuilding C-54's for the USAF. Wolfe added that the combined efforts of the Air Force and PAC have reduced overhaul costs by approximately 43.1% within three years.

Stroukoff Sells Chase Stock; Forms New Firm

Michael Stroukoff has established Stroukoff Aviation Corp. as a successor to Chase Aircraft Corp., following the sale of his interests in Chase to the Henry J. Kaiser Co. for $1,750,000. The money was put up by Willys Motors, Inc., in exchange for the 510,000 shares of Chase stock held by Stroukoff.

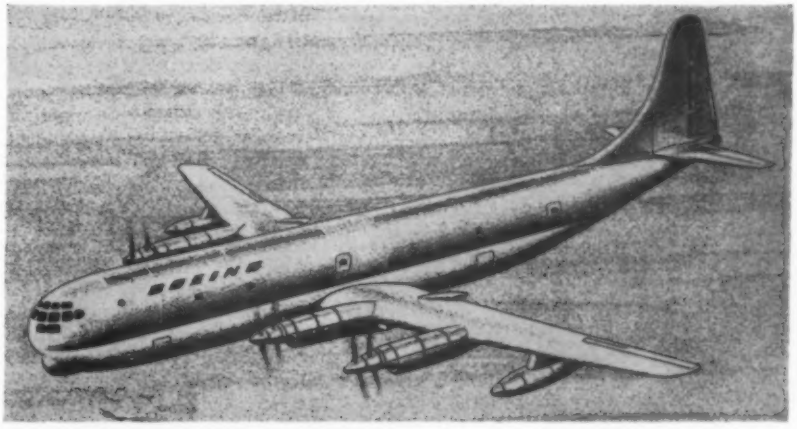
Under the terms of the agreement, Kaiser interests acquired, in addition to the stock, the Chase firm name and rights to the USAF-cancelled Chase contract for production of the C-123B assault transport aircraft. Stroukoff, in addition to the capital for his own company, retained all Air Force research and development contracts which Chase held at the time of the deal, as well as an option to leases of Chase facilities in Mercer County, N. J., and the right to buy all Chase furniture, fixtures, and machinery at book value.

PAD Rescinds Order on Use of Leaded Avgas

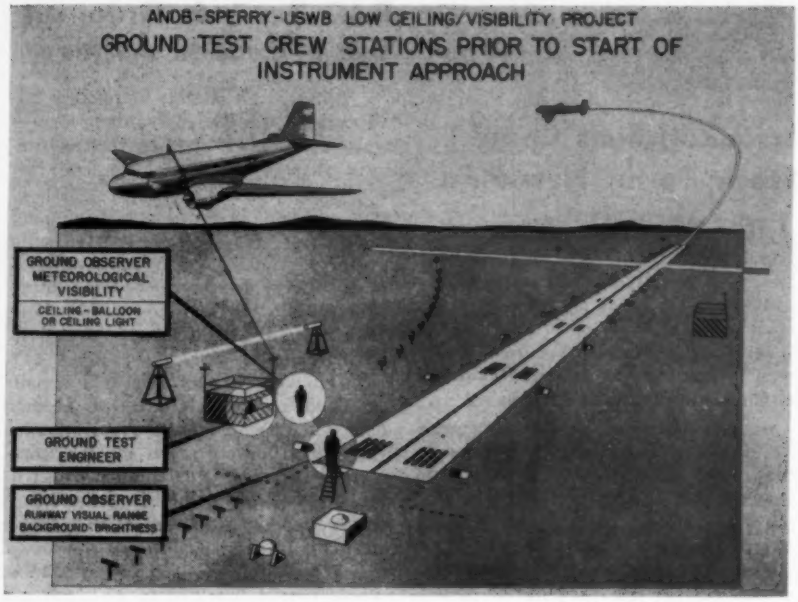
Effective October 1, Petroleum Administration for Defense order No. 4—which two years ago set the requirement that refineries use not less than 4.00 cc of tetraethyl lead per gallon of aviation gasoline for domestic use and 4.6 cc for export gasoline—is being rescinded. The decision came after a recent survey by the agency indicating that cancellation of the order would cause serious hardship in only two of the nation's refineries.

But whether the order will remain cancelled or be reinstated at a later date will depend on the cooperation of the refiners even more on the commercial airlines, PAD officials warn. Joseph A. La Fortune, deputy administrator, explained that all of the agency's calculations on avgas supply are based on the assumption that its cancellation would permit a return to TEL content in use before the order was issued, and any attempt to use less lead may necessitate new regulations.

PAD has afforded refiners advance notice of the move to plan needed production changes.



Power for two Boeing C-97 Stratofreighters will come from Pratt & Whitney T34 turboprop engines, each producing 5700 hp. The C-97's were ordered by the Air Materiel Command for use as service test aircraft, and should fly sometime next year. Artist's conception of the Stratofreighter as adapted for use with turboprops is shown above. Turboprops will increase power almost 63% and reduce empty weight by almost 5000 pounds. Douglas and Lockheed are both working on military transports which would use the P&W T34's, Douglas in a version of its Globemaster and Lockheed in a modified Super Constellation.


ANDB-SPERRY-USWB LOW CEILING/VISIBILITY PROJECT
GROUND TEST CREW STATIONS PRIOR TO START OF INSTRUMENT APPROACH
GROUND OBSERVER METEOROLOGICAL VISIBILITY
CEILING-BALLOON OR CEILING LIGHT
GROUND TEST ENGINEER
GROUND OBSERVER RUNWAY VISUAL RANGE BACKGROUND-BRIGHTNESS

SPERRY STUDY compares instrument data with human eye measurements. Ceilometer is shown in foreground, transmissometer to left of engineer's station.

New Instruments Cut Missed Approaches

Funds appropriated for visibility-measuring devices following successes in ANDB-Sperry tests.

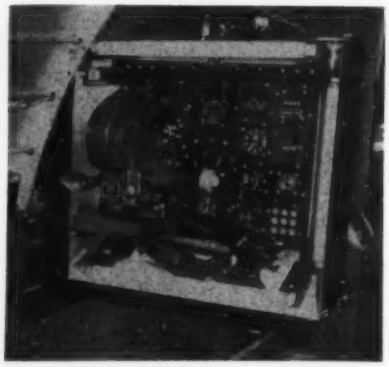
WITHIN a matter of months civil and military transports operating on instruments into airports in the New York area will begin to reap benefits from a bad weather approach study being sponsored by the Air Navigation and Development Board and conducted by the Sperry Gyroscope Co.

The project is a scientific study of how to tell the pilot what weather to expect in the approach zone. Although the program being operated by Sperry at MacArthur Field, L. I., under a $400,000 contract with ANDB is only about 30% complete, the U. S. Weather Bureau, a major third party to the experiment, has announced these developments:

- **For the first time since 1940,** funds have been appropriated for new airport weather observing devices of the type being used in the ANDB test;
- **Critical airport locations** in the U. S. will be equipped soon. First three sets of equipment will go to New York's major airports, namely La Guardia Field, N. Y. International Airport, and Newark Airport. A dozen other locations will be outfitted during fiscal 1954.

The Weather Bureau's decision to buy the new equipment stems in part from the successes of the MacArthur Field project and partly from experience gained with another test installation at Washington National Airport. At WNA the new weather instruments are said to have cut the number of missed approaches from eight per cent to three per cent of all flights approaching visibility reported at one mile or less.

From the experience gained so far in the Sperry test, a USWB representative said that the new weather instruments being evaluated have produced data of "significant and important" difference from observations obtained with methods used previously. The devices now being adopted by USWB are a transmissometer developed by the National Bureau of Standards, which measures the visibility along the runway, and a rotating-beam type ceilometer designed by L. W. Foskett of the Weather Bureau. This device measures the height of the ceiling and is being built by Crouse-Hinds, Inc., of Syracuse, N. Y.



AIRBORNE CAMERA photographs special instrument panel every two seconds.

One big advantage of the new instruments is the simplicity with which they can be set up at a remote location.

In the case of the ceilometer, this permits spotting the unit in the area of the middle marker beacon in the approach zone, where the pilot is usually faced with the decision of completing his landing or executing a "missed approach" procedure. This contrasts with the location of the fixed-type ceilometers now in common use, which are situated as much as 6000 feet from the site of the middle marker.

The new ceilometer also gives a virtually continuous reading of visibility, and promises to permit the control tower to provide a pilot with approach zone weather data as little as eight minutes before he actually experiences it.

The ceilometer is made up of a projector and detector spaced exactly 200 feet apart. The beam from the projector is modulated at 150 cycles per second by a barrel-type shutter and is transmitted against the cloud base every 12 seconds. The ceilometer detector distinguishes the modulated beam of the projector from daylight or other lighting and transmits the recorded angular reflection of the return beam to a cathode ray tube located at the data recording point. By use of a grid arrangement these readings can readily be converted to that of measured ceiling expressed in feet of altitude.

The 12-second interval at which ceiling data can be obtained with the new ceilometer promises a vast improvement over the average frequency of six minutes for readings now taken with fixed ceilometers and up to 15 minutes with weather balloons.

In the Sperry project these new instruments are being tested to determine by what means their data can best be related to the pilot making a low visibility approach. Throughout the program the instrument data is compared with "human eye" measurements and photographic recordings.

Key to the airborne recording of visibility is a "visible terrain" camera mounted on the left hand side of the fuselage. It is actually two cameras in one, with a main wide-angle lens photographing a projected area 80° vertically and 80° horizontally in the path of the airplane. At the same time, a special internal lens photographs a fixed grey scale which is used to establish accurately the brightness of objects appearing in the main photograph. • • •

News Briefs

The 15th anniversary of the Civil Aeronautics Act, which set up a five-man "Authority," an Administrator, and an Air Safety Board in 1938, passed almost unnoticed on August 23. Although reorganized by the President in 1940, the Act has remained basically the same since it was originated.

• •

Indication that Douglas Aircraft may be content to stick with its current fleet of aircraft and **let the jet transport wait** for a while was seen in a speech by F. E. Hines, Douglas vice president of finance, in which he stated that "the aircraft now in production at Douglas would appear to satisfy most of the airline requirements for some years to come."

• •

The XL-19B, which Cessna has powered with a Boeing 502-8 gas turbine engine, has been delivered to the Air Force.

• •

A visit to the United Kingdom for the CAA's Turbine Transport Evaluation Team was arranged by the head of the team, George Haldeman, during a recent three-week visit to Britain, where he met with officials of the Air Registration Board. Discussions of the certification of the Comet III will be on the visit's agenda.

• •

There were 53,410 **active civil powered aircraft** in use on January 1 of this year, according to CAA records. This represented just over 100 more than the previous year's figure. An additional 34,000 are currently listed as inactive. The number of single-engine aircraft fell off slightly during the year, with the increased total accounted for by multi-engine planes.

• •

An air-sea rescue system set up by Douglas Aircraft will be used in the future to safeguard any test pilots who may have to bail out over water. A company plane will be kept standing by to locate the pilot and drop a life raft, which will be **fully inflated by the time it hits the water.**

• •

A program to study the merits of a **universal cargo carrier** for air, rail, or road shipments is ready to start within the Air Force. Program involves 12 **Transit Vans,** each with a capacity of 2100 cubic feet.

• •

A carefully balanced **report on the Stratoport** (runway sandwiched between wind-breaking fences) has been produced by the CAA. Noting **interference with electronic devices** as one possible defect of the metal fences, the report cautioned that its conclusions could "neither be proved nor disproved without full-scale experiment."

• •

The Navy and the Air Force have taken steps to **split up possible A-bomb targets** between themselves, according to Adm. Arthur W. Radford, JCS chairman. The Air Force, in accordance with an inter-service agreement made at Key West some time ago, bears primary responsibility for such strategic bombing strikes.

• •

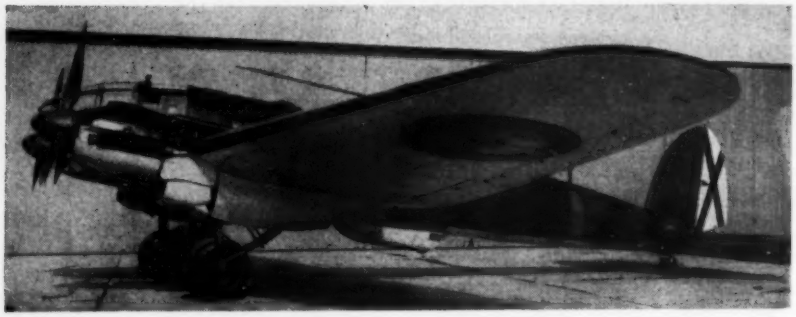
Robert E. Gross, president of Lockheed Aircraft, has been named as one of 12 businessmen and government officials who will form a committee to review and modernize Defense Department financial procedures.

Martin Shows T-Tail Marlin

NEW TAIL for Martin's P5M-2 Marlin is T-shaped, thus requiring less area and providing greater efficiency. Electronic gear housing projects from trailing edge.

T shape keeps tail surfaces well clear of spray during P5M take-off.

ON LAND the new Marlin shows lines identical with predecessor P5M-1, with the exception of the tail.



GERMAN-DESIGNED Heinkel He 111 is the Spanish Air Force's No. 1 offensive weapon. It is still in large-scale production at the La Hispano Aviacion plant in Seville.

Spanish Industry Stages Come-Back

New role for manufacturing facilities may follow deal with U. S. on air bases; current planes obsolete.

By Anthony Vandyk

First of two articles on Spanish aviation based on a visit to Spain by American Aviation's *International Editor. He is believed to be the first foreign aviation writer to have been given Spanish government sponsorship for visits to aircraft plants and air bases. A second article will deal with the Spanish airlines.*

MADRID, SPAIN—The main production items of the Spanish aircraft industry—and the only combat planes in the Spanish Air Force—are still three completely obsolete German types: the Heinkel He 111 bomber, the Junkers Ju 52 bomber/transport, and the Messerschmitt Me 109 fighter. This amazing situation, reflecting Spain's political isolation and the nation's lack of funds, is soon to be improved under an agreement with the United States now awaiting signature.

Under the proposed program Spain will get about half a billion dollars worth of economic and military aid. In return the U. S. Air Force and Navy will be allowed to use Spanish bases. One factor that has delayed conclusion of the defense pact is Spanish insistence that there be no control of the Spanish armed forces, directly or indirectly, by the U. S. Air bases, the Spaniards maintain, should be under the command of Spanish Air Force officers, with the USAF units at the fields in the position of "lodgers."

The precise result of the almost two years of horsetrading are still not known, but it is expected that the USAF will obtain the use of about seven bases and that the Spanish Air Force will be supplied with modern types of aircraft. Spain would like the U. S. military aid program to provide a role for her aircraft industry, which has long experience in producing foreign designs under license (until recent years, when foreign nations refused to cooperate). It has always been Spanish policy to build military aircraft in her own plants rather than to import them from abroad.

The record shows that the Spanish aircraft industry has been eminently successful in manufacturing foreign planes of all types under license. Apart from the German models currently in production, the three Spanish aircraft firms have produced such diverse types as the Dornier Wal, the Fokker F VIIB, and the Vickers Vildebeest, to mention only three of the larger aircraft. There has been no U. S. plane built in Spain so far. Production of a Martin bomber was scheduled in the 'Thirties but was never realized. The engine industry, however, has long built American-type radials.

Because the Spanish aircraft industry has mainly concentrated on license production of foreign designs for models other than trainers, research facilities in Spain are modest. A big effort is now under way to improve this situation and a "little NACA" is now being completed at Torrejon de Ardoz near Madrid. Known as the Instituto Nacional de Tecnica Aeronautica, (INTA), it is under the control of the Air Ministry and is responsible for prototype testing and certification as well as for general research.

Unfortunately, the well laid out, spacious buildings (including two wind tunnels and several engine test houses) lack modern equipment. Much of the apparatus is German; U. S. equipment is almost completely absent. Another handicap is the lack of technical data due to foreign nations' reluctance to provide information from their experimental stations.

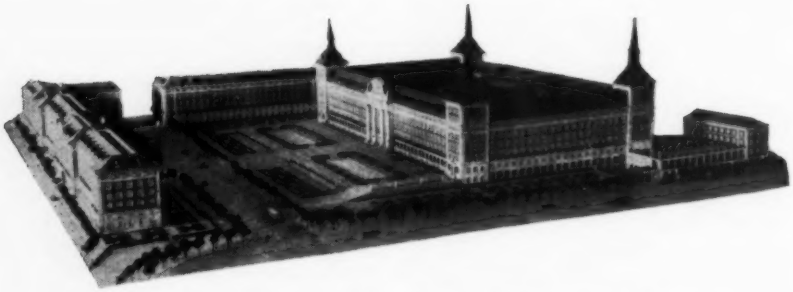
Crave Information

Throughout Spanish aviation there is a craving for information about what is going on abroad. A recent visit of USAF and RAF jet fighters to Madrid resulted in the authorities being swamped with requests from pilots of all types and ages for permission to fly the F-84's and Venoms. Such enthusiasm and interest reflects the difficulty which the Spaniard has in traveling abroad to get first-hand knowledge of foreign developments. Spain's lack of dollars makes a visit to the U. S. practically impossible.

Although short of all foreign currencies, Spain is less badly off in pounds sterling and French francs than in many other monies, but political reasons have slowed down buying of aviation products in both countries.

Bristol has sold the Spanish airlines a few Type 170 Wayfarers and Freighters and is participating in a company called Talleres Aeronauticas de Barajas, which is to overhaul Bristol aircraft and engines at the Madrid airport. Its plant will be completed next spring.

British engines have been used in various recent Spanish prototypes, but Spanish-built powerplants are fitted to production models wherever possible. Various difficulties resulted in the Rolls-Royce Merlin and the de Havilland



NEW BUILDING to house the Spanish Air Ministry is approaching completion. The Ministry is responsible for civil as well as military aviation.

propeller being used in the Me 109 fighters instead of Spanish-built types. It is probable that if and when Spain starts to build jet engines, she will draw on the experience of Hispano-Suiza in building Rolls-Royce designs in France.

Spain's engine manufacturing company Empresa Nacional de Motores de Aviacon S. A. (ENMASA), resulting from the nationalization of the Elizalde plant in Barcelona in 1951, builds five basic engines: the 90-hp flat-four Flecha; the 125/150 hp in-line Tigre; the 250-hp radial Alcion; the 500-hp radial Sirio; and the 750/775-hp radial Beta.

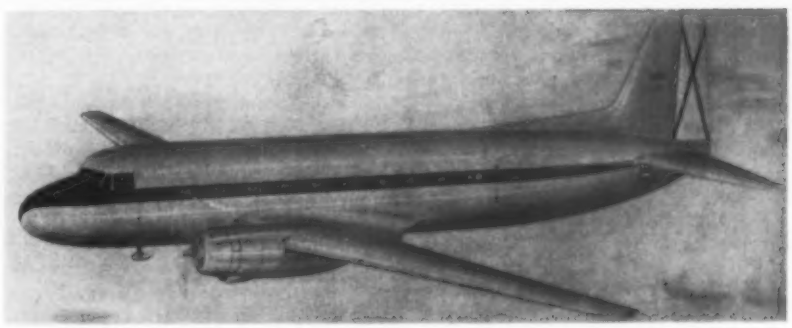
Although not officially nationalized, the three Spanish aircraft manufacturing companies are virtually controlled by the government, since they are almost completely dependent on government contracts for their business. The government financing institute owns one-third of the capital of Construcciones Aeronauticas S. A. (CASA), the most important of the three firms, which was founded in 1923 and today has plants at Getafe (1500 workers), Seville (1000), Cadiz (300), and Madrid (200).

To date CASA has built over 3000 aircraft. Prior to the civil war a major production item was the French-designed Breguet XIX (400 were constructed). CASA-built Breguets were the aircraft which made two historic Spanish non-stop trans-Atlantic flights: in 1929 from Seville to Bahia, Brazil, and in 1933 from Seville to Camaguey, Cuba.

At present the main CASA factory at Getafe is completing the last of a production run of 170 three-engine (ENMASA Beta) Junkers Ju 52's, at the rate of one plane a week, prior to devoting the whole of its facilities to the production of a twin-engine CASA design, the CASA 201 Alcotan. The Alcotan, which made its first flight in 1949, is the first twin-engine plane of Spanish design and construction. Although initially Armstrong-Siddeley Cheetah engines were used, production planes have the 500-hp ENMASA Sirio.

The Spanish government has ordered 112 Alcotans in three different versions—transport, navigation trainer, and bombing trainer. By the middle of this summer the first two production aircraft were undergoing their flight tests, the second two were about to fly, and fuselages of an additional 24 had been completed. CASA plans to build about five Alcotans each month.

A larger, tricycle-gear version of the Alcotan made its first flight in 1952 and a series of 20 of this aircraft—the CASA 202 Halcon—may be built at the CASA Seville plant. The 18-passenger transport is powered by two 750-hp ENMASA Beta engines. At present the Seville factory is still building a series of 200 Heinkel He 111 bombers. Initially they were equipped with Junkers Jumo engines, but later the Rolls-Royce Merlin was substituted. In Cadiz CASA is still building German-designed Bucker trainers.



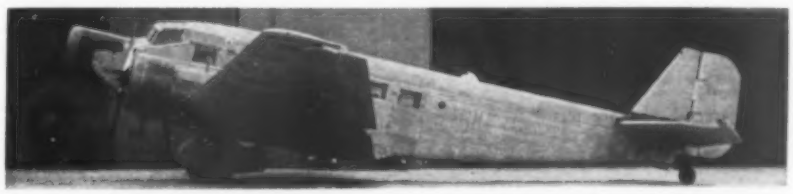
FIRST TWIN-ENGINE Spanish designs: above, the CASA 201 Alcotan—112 are being produced in Getafe for the Spanish Air Force; below, the CASA 202 Halcon—production plans are uncertain, but a small series may be built in Seville; at bottom, the CASA 207 Azor—first prototype is scheduled to fly early next year.

Most ambitious aircraft ever designed in Spain is the twin-engine CASA 207 Azor, a transport in the Convair-Liner class with a fuselage resembling the DC-4. The first prototype is now undergoing its static load tests and is due to fly early in 1954. Powerplant will be the Bristol Hercules of 1700 hp. Still in the project stage is the CASA 208, a design resembling the Fairchild C-119.

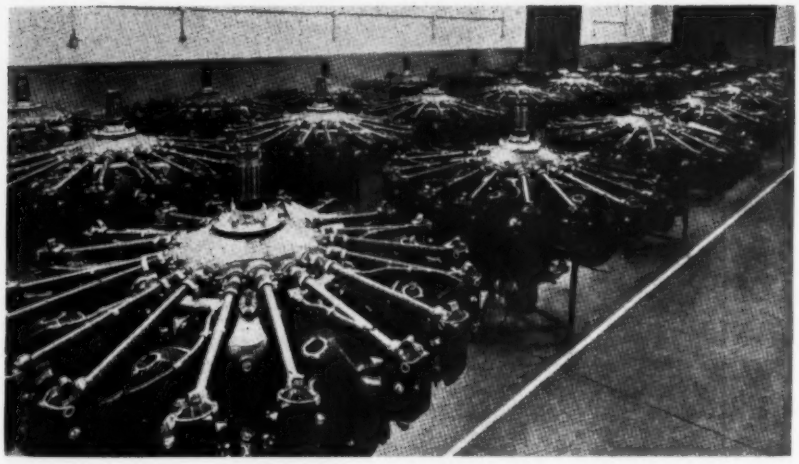
Spain's second aircraft company is La Hispano Aviacion S. A., whose predecessor, Hispano Suiza of Guadalajara, was licensed from 1927 to 1936 to build the French-designed Nieuport 52 fighter with a 550-hp Hispano Suiza engine. In 1935 the firm won second place in a design contest for a primary trainer with its E-34 biplane.

The Guadalajara plant was destroyed in the civil war and when Hispano started operations at a new factory in Seville its first aircraft was an improved version of the E-34. Subsequently the company concentrated on production of advanced trainers and fighters.

At present Hispano's two production items are the Messerchmitt Me 109 fighter and the HA-43 advanced trainer,



LAST OF 170 Junkers Ju 52's has still to come off CASA's production line in Getafe. Spanish Air Force uses the German-designed plane for bombing and navigation training, as well as for transport work.



LARGEST of the five engines produced by ENMASA, Spain's nationalized engine manufacturer, is the 750-hp Beta. It powers the Spanish-built Junkers Ju 52's, the CASA 202 Halcon, and one version of a new advanced trainer, the Hispano HA-100.

powered by the Rolls-Royce Merlin and the ENMASA Sirio, respectfully. The company has in the prototype stage a replacement for the HA-43, the tricycle-gear HA-110; one version will have a Sirio and another the more powerful Beta. Hispano also has under development Spain's first jet aircraft, a Messerschmitt-designed twin-engine (Turbomeca Marbore) trainer designated HA-120.

Spain's third aircraft company is Aeronautica Industrial S. A. (AISA), which now includes the Iberavia design staff. Located at Cuatro Vientos airfield on the outskirts of Madrid, the company now builds only small aircraft; in the past it manufactured large multi-engine planes, including a series of 12 Fokker F VIIB transports. At the outbreak of the Spanish war it had under construction a six-engine bomber of its own design.

Apart from sailplanes the main production item for the past 10 years has been the HM series of light aircraft, built in various versions, including trainers, target tugs, seaplanes and personal aircraft.

Most of these planes have been delivered as trainers. Powerplant is the 150-hp ENMASA Tigre, the engine also used in the I-115 which is to be built by AISA as the Spanish Air Force's basic trainer. The I-115, a more powerful version of the I-11 Pulque (which has a 90-hp Continental), is still undergoing its flight test program.

AISA has under development a high-wing single-engine model, the AVD-12, designed by Emile Dewoitine, one of France's greatest designers, who is now associated with the Spanish company. In the project stage at AISA are two helicopter designs, the IH-51 and IH-52, which represent the first Spanish ventures in the rotorcraft field since the days of Juan de la Cierva, inventor of the autogyro.

This brief review of the Spanish aircraft industry would not be complete without a reference to the excellent working conditions that prevail. Moreover, for industrial workers, Spain has become a virtual "welfare state" and the low wages—equivalent to little more than 50 U. S. cents a day for the average aircraft workers—are supplemented by many free or reduced-rate social services for the worker and his family.

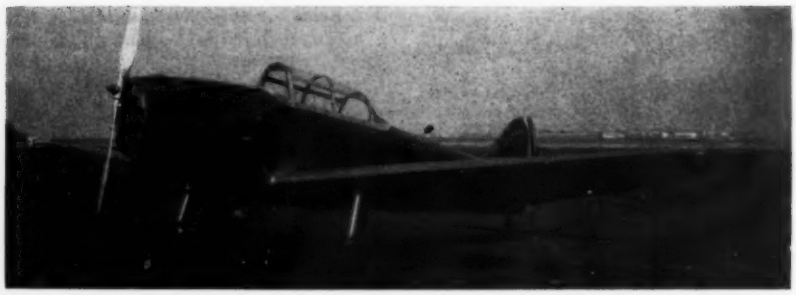
Cheap Meals

In the aircraft plants, for instance, this writer saw excellent full-course meals being served in spacious, spotlessly clean restaurants at a cost to the worker of just over five cents. These facilities are used by all staff members from the executives down to the apprentices (the Spanish aircraft industry has a comprehensive apprentice scheme which guarantees a constant supply of skilled labor).

Although by U. S. standards workers' wages seem low, compared with Spanish Air Force pay they are high. The enlisted man gets about 15¢ a day and even a second lieutenant pilot makes only about $50 a month, including his flying pay.

Despite the poor pay and the obsolete aircraft which they have to maintain or fly, the officers and men of the Spanish Air Force have excellent morale and show a high level of professional skill. There is no lack of recruits; in fact there is a long waiting list of young men who wish to make the Spanish Air Force their career. Within the limits of Spain's $41 million aviation (civil and military) budget and the resources of the country, the Spanish Air Force is currently concentrating on preparations for the advent of new equipment. In recent years there has been a progressive expansion and improvement of air bases, with the result that at most fields all ranks now have exemplary working and living quarters. Runways have been lengthened and strengthened. All that is now wanted is modern aircraft and radar equipment to transform the Spanish Air Force into one of Europe's finest air arms. • • •

PLANNED as the future basic trainer for the Spanish Air Force, the AISA I-115 is powered by a 150-hp ENMASA Tigre.



DESIGNED by the INTA research establishment, the HM-1 is a trainer version of a model that has been in production by AISA for some 10 years.

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"little gem" FITTING FEATURES

1. KNIFE-LIKE SPUR separates inner tube from reinforcing wire braid during assembly.
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3. LIP SEAL is formed as end of hose inner tube seats in annular chamber.

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A MILITARY COMMENTARY . . .

Accessory Manufacturers Get Their Backs Up

A POSSIBLE ROADBLOCK looms ahead for the Air Force's new Single Prime Contractor Policy (SPCP), which could revolutionize AF procurement. Although SPCP is only in the try-out stage, certain members of the component and accessory industry already have voiced objections which certainly were not unexpected.

Since SPCP gives the aircraft manufacturer contractual responsibility not only for the airframe but for all components and related equipment, this segment naturally would become alarmed. With an estimated 1600 component manufacturers representing some 600,000 persons serving the aircraft industry, sentiments of this group could have a profound negative effect on future widespread use of SPCP.

First to speak out skeptically in public was Dr. Ivan A. Getting, vice president of the Raytheon Manufacturing Co., supplier of aircraft electronic components. He recently cited what he considered dangers to the new approach as:

- **Growth within the airframe industry** of specialized facilities, lacking advantages of stabilized peacetime and commercial support;
- **Severance** of an intimate intellectual relationship between the component industry and the AF;
- **Possible cancellation** of component projects not directly associated with end-item objectives, thereby reducing the price tag, but perhaps at a cost to advanced performance.

The Big Worry

Undoubtedly the greatest worry of these manufacturers of allied aircraft equipment is the possibility that prime contractors will start producing certain components to fit their needs, thus becoming competitors.

Such concern among component industry leaders is being studied intently by the Air Research and Development Command, the AF organization which has initiated use of SPCP for one project on an experimental basis. ARDC officials feel component people have not been sufficiently "read in" on the new procurement plan, and they have already taken steps which might legitimately be termed "Operation Enlightenment." In special meetings with component and accessory groups, they have presented not only the advantages of SPCP, but have also put out a great deal of effort explaining steps that have been taken to protect this industry's interests.

In particular, they point out certain "restraints" placed on prime contractors, preventing them from competing directly with already established component manufacturers or trying to produce equipment for which they lack the capacity or facilities. To see that they don't, an ARDC-Air Materiel Command monitoring agency, known as the Joint Project Office (JPO), has the job of continually policing SPCP projects.

With such dispersal of equipment subcontracts among airframe manufacturers, it would seem that the continually publicized AF drive for standardization would suffer. But under current contractual procedures, standardization efforts aren't going too well anyway. This was emphasized by J. C. Garrett, president of the Garrett Corp., Los Angeles, who said recently that "present trends are frankly frightening."

Not Much Standardization

Noting that his own plant is building more than 850 different models of aircraft and missile components, Garrett said this figure includes over 250 types of electric actuators, 350 different models of air valves and regulators, and 45 different cooling systems. Since there are some 150 competitors in this field, there wouldn't appear to be much, if any, standardization here.

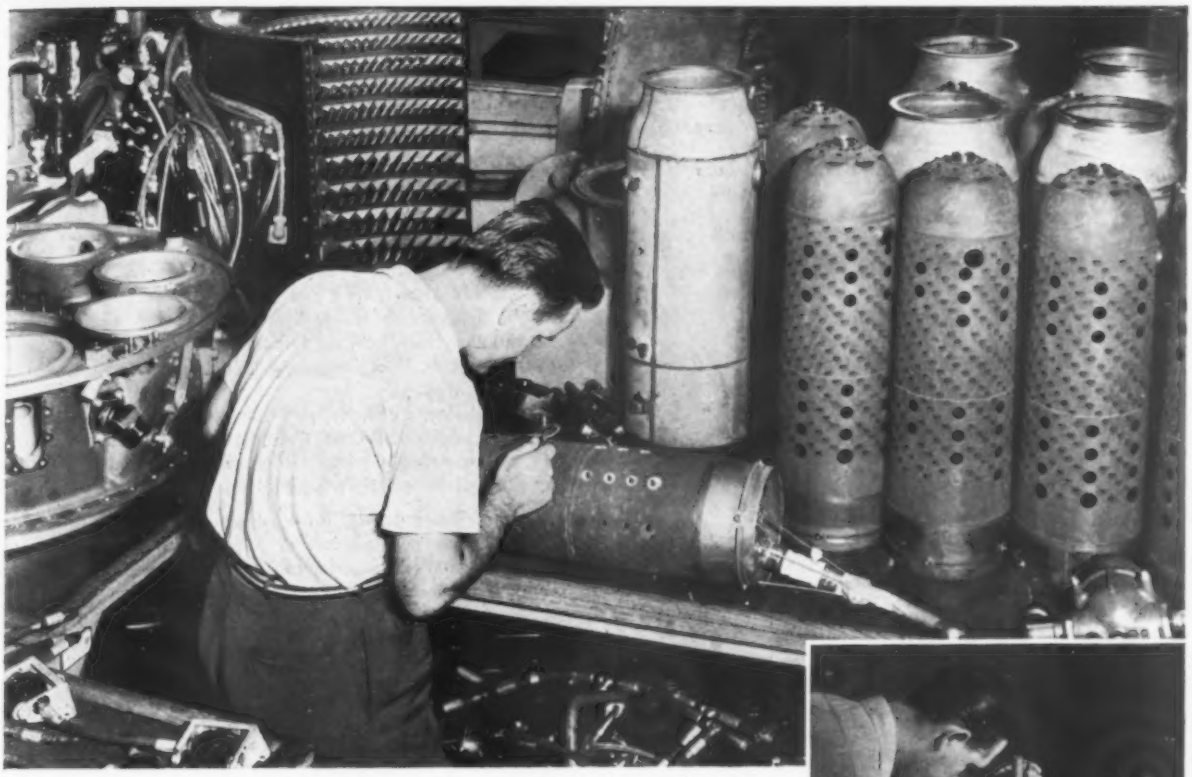
As to SPCP, standardization aims are not discarded. Again the JPO comes into play by investigating all subcontracts to weed out duplication and establish uniformity where possible. In the interest of economy and efficiency, the prime contractor will prefer to buy equipment from the component manufacturer who produces a proven, superior product. This could well narrow down variation in equipment, backing current AF sentiment that "realistic standardization can not be accomplished by regulation but only by usage."

Success of SPCP depends largely on the single trial contract now in effect, that with Consolidated Vultee Aircraft Corp. for development of the XB-58 all-jet supersonic bomber prototype (see page 30). August C. Esenwein, Convair's Ft. Worth Division manager, calls the new contractural procedure "Weapons System Management," which connotes more generally the philosophy behind SPCP. ARDC people find the SPCP title less readily confused with the AF Weapon Systems Concept. This is another thing altogether; it refers to a weapons system (airframe, engines, components, accessories, skills, supporting facilities, and everything required to operate an airplane) as a single entity.

Despite certain mixups in nomenclature and current criticism of the prime contractor emphasis, the AF and aircraft industry are enthusiastic about the new procurement plan, since it is designed to cut lead time, save money, and produce better airplanes. If it accomplishes this, AF procurement procedures will have reached Utopia.

. . . Harry S. Baer, Jr.

ANOTHER REASON ALLISON LEADS IN THE AIR



Inspector uses sealed beam spotlight and magnifying glass for visual check of inner combustion chamber.

The sky's the limit on our tests

Turbine blade serrations are inspected under 45-power binoculars.

In the never-ending search for higher standards of jet performance, for improved materials and increased endurance, Allison engineers keep putting jets through their paces under every conceivable flight condition—even to altitudes above 45,000 feet.*

Then, as the picture above shows, they completely dissassemble the engine for a detailed inspection of every part. The parts you see here are from an experimental model of a J35 engine that recently completed an altitude test well above the 45,000-foot mark. Some 3,500 parts are spread out on tables for examination. Tests go far beyond mere visual scrutiny and usually include fluorescent-penetrant, magnetic-particle and dye-penetrant inspections, as well as X-rays in some instances. No part is too small to be checked. And constant improvements are being made in our inspection procedures to be sure that no flaws or breakdowns in any piece escape detection.

Yes, the sky's the limit on our tests. And this thoroughness of inspection—in both experimental development and production engines—pays off in the greater dependability for which Allison engines are famous.

**Security restrictions do not permit identification of the actual altitude reached.*

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World's most experienced designer and builder of aircraft turbine engines—J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines

Interview

with

Gilbert Perier

Board Chairman

SABENA Belgian Airlines

• • •

The European Viewpoint

• • •

Gilbert Perier, board chairman of SABENA Belgian Airlines, is one of Europe's most respected airline executives. He is a past president of the International Air Transport Association and a present member of the IATA executive committee. An attorney with a great interest in engineering, Perier had a varied career before joining SABENA, including service in government and in African affairs. He has always striven to maintain successful private management and SABENA now receives state aid only in the form of limited repayable loans.

Under Perier's leadership SABENA has grown into the world's sixth largest airline (in terms of route mileage) serving 76 points on four continents. In addition to its well-known services to Africa (started long before World War II) and to the United States (started in 1946) SABENA has flown a trans-Pacific Korean airlift operation between San Francisco and Tokyo and last year began a charter contract service between Brussels and Tokyo via the Middle East and India.

In Europe SABENA recently inaugurated the world's first international passenger service with helicopters to supplement its larger-scale intra-European operations with fixed-wing aircraft. SABENA's principal aircraft types are the Douglas DC-6 and DC-6B (soon to be joined by the DC-6A) and the Convair 240.

Q. How do you feel about the recent unilateral action taken by the Universal Postal Union in cutting international mail pay to three gold francs?

A. It is unsatisfactry but there is nothing we can do about it. They could have decided on a rate of one gold franc; the only thing we could do is refuse to carry the mail, which is impossible. The situation is not going to improve.

Q. Why should mail rates be higher?

A. In theory each commodity has to pay the going rate. For instance there are different rates for such items as gold and flowers. The Post Office asks more for letters than for other objects. When we carry gold, we ask twice the price of normal cargo.

The Post Office is not "subsidizing" us. It is paying us for the mail carried. All over the world postal administrations are now going to pay three gold francs, which is less than the rate for certain valuable goods.

Q. What do you think of surcharges?

A. I have made rather a revolutionary proposal regarding surcharges: instead of having a surcharge, I would like to have a reduced rate for international mail going by sea. At the present time virtually all first class mail goes by air: about 95% of the international mail is carried by air nowadays. I have suggested that the public could mark mail with an appropriate label when they want to pay less. That mail would go by sea instead of by air.

Q. Will profits still be possible with the reduced rates?

A. Definitely not. But it will not put the companies in the red. Mail represents only eight per cent to 12% of non-passenger traffic carried by international operators.

Q. On what basis do you operate with regard to rates of return on investments?

A. Fixed returns should be six per cent, which is legal and reasonable.

Q. What is "fixed return?"

A. The law requires that if you have a profit, five per cent of it goes to a reserve fund and four per cent to six per cent to the shareholders; after that, you may put more money in the reserve or give an additional dividend.

Our statutory regulations establish the fixed dividend of six per cent as recoverable; if you do not pay it one year, you can pay 12% the following year.

Q. What about jets?

A. Many things are involved. We shall be willing to let other airlines lead the way. We have no national prestige involved. We shall wait and see. We are not big enough nor financially strong enough to take part in early developmental operations from which technical improvements will undoubtedly result.

Mr. Pirson, our technical manager, is studying designs and mockups with Boeing and others. In fact they are too big for us. We would much prefer to have smaller aircraft (40-60 passengers) with possibly, for 1959-60, the Comet III for use on our heavy-traffic long routes—the Atlantic and the Belgium-Congo services.

Q. What is your traffic outlook on the North Atlantic this year?

A. We expect an increase in 1953. We anticipate bettering the 1952 figures by almost 30%.

Q. Do you attribute the increase on the Atlantic run

Coach fares: "We had to follow the pattern"

to the **introduction of tourist class?**

A. I am quite sure that on the Atlantic tourist class has created new traffic but I don't believe that in Africa tourist class will bring us new business. We have been obliged to introduce it there, even on the Belgian Congo domestic lines, because everybody else is starting to.

Q. To what extent do you believe you have lost first class traffic by introduction of tourist service?

A. We could have had more passengers without decreasing the tariffs, but here are the actual figures:

Passengers carried

1951	5,878 first class
1952	6,635 tourist class
.....	3,615 first class

But it is impossible to say how many people would have flown first class had there been no tourist. Many people who are financially able to fly first class sometimes fly tourist.

Q. What about tourist fares within Europe?

A. There is really no tourist fare, just a decrease in tariffs. Our Convairs transport the same number of passengers for a fare that is from 20% to 25% lower. Load factors are up as a result of the introduction of tourist service in Europe.

Q. Was the introduction of tourist service a sound move by IATA airlines?

A. On the Atlantic, yes. It was not sound in the other parts of the world, especially in Africa.

Q. And in Europe?

A. We had to follow the pattern, do it and see what would happen. Otherwise there would have been an open situation. On certain routes there is a possibility of creating new traffic: Nice, Italy, tourist centers in general. It is not true for London, Germany, and certainly not Lisbon.

Q. Sabena has been prominent in helicopter developmental activity. Would you elaborate on your interests?

A. We are pioneers in that field. It is not a great financial burden for us. No city is better located than Brussels for generating helicopter traffic. If you draw a circle around Brussels with a radius of some 200 miles, the present range of the helicopter, you include London, Paris, the industrial parts of Northern France, the Ruhr, the Saar, Dusseldorf, Holland; in all, 75 million people.

Q. Wouldn't customs clearances prove very impractical for such an operator?

A. We want to make the helicopter the only means of transport which is strictly reserved for people who have nothing to declare to the customs. All they would have to do is sign a printed declaration stating that they have nothing to declare, a declaration which all countries would accept.

Instead of having a static custom organization at the airport, customs officers could fly in the helicopters in the same way that they travel on international trains.

Q. How much will your helicopter operations cost?

A. We are not going to ask for any subsidies. We operate on our own. We now fly a helicopter mail service with small Bell 47-D1 machines with very good regularity. We will switch the Bell 47's, formerly used for our helicopter mail service, to our pilots' school and use the Sikorsky S-55's to carry the mail in addition to flying the passenger services; that will yield a certain amount of revenue. If we lose something, it will not be very much. We have about the same fares as for conventional aircraft.

Q. What about the safety aspect of carrying passengers in single-engine helicopters?

A. It is a risk we have to accept. We are going to carry mail for several weeks before operating with passengers. Also, we'll be careful about the weather conditions. Anyway, the fact that the insurance companies have not asked us a special premium for carrying passengers is certainly significant.

Q. What routes are you flying?

A. Brussels-Antwerp-Rotterdam (Holland); Brussels-Lille (Northern France). Brussels-Cologne-Bonn (Germany). Next spring we will go to the Saar via Luxemburg.

We are now obliged, for political and economic reasons, to operate a DC-3 service between Brussels and Luxemburg—we generally carry very few people. But our helicopter will go to Luxemburg on its way to the Saar, and create more traffic.

Q. Do you see any promising developments in turboprop transports on the horizon?

A. The Bristol Britania project is interesting, especially for cargo, and economical. We have a cargo line to New York and one to the Belgian Congo, which will develop. Sabena is one of the airlines that has the biggest percentage of cargo in relationship to traffic.

Q. What is your feeling about the revival of the German airlines?

A. We always believed it was inevitable that they start business again. We have not built up too much on German traffic. Geographically we're not so well suited to it.

Q. Would you comment on the recent change in Europe requiring passengers to pay for ground transport between the airports and the cities.

A. It is a blunder to make the passengers pay for that. It's ridiculous. Better let the price of the ticket include the price of the fare by bus between airport and town. But we had to follow the other companies.

Q. Have airline accommodations and the so-called "tourist" flights been reduced to too low a standard?

A. Perhaps so on long distances. In the Congo there are many complaints about the number of people.

Q. Do you see any early need for additional aircraft for Sabena?

A. By 1960, we might want to buy a few new planes. We would prefer to have, say four at $3,000,000 than two at $6,000,000. We would buy jets if they were economical.

Q. What kind of improvements do you think should be brought about to increase airline safety?

A. In Africa and all parts of the world outside of America improvement is needed in meteorological services. Better communications are also needed.

Q. What is your policy toward the expansion programs of other airlines into Belgium and other European countries?

A. We have no policy. We have always been for freedom of the air, generally speaking, but have always been careful about the Fifth Freedom. Too many airlines want to go to the Belgian Congo. • • •

ITALIAN-BUILT VERSION of the F-86 Sabre will be equipped with .30 machine guns instead of the rockets with which the American version is armed.

Will the Italian F-86 Be Obsolete?

Fear of revealing details has led to plans for production by Fiat of plane with obsolete equipment.

By Robert M. Loebelson

(American Aviation's Manufacturing Editor has been visiting European aircraft plants participating in the NATO aircraft program to discover just how close they are to production.)

TURIN, ITALY—Fiat Co. here, one of the largest automobile builders on the Continent, is gradually moving to a point where it will be assembling an all-weather version of the North American Aviation F-86, but Air Force officials at Wiesbaden, in Paris, and even in the Pentagon, are wondering whether a mistake has been made in giving Fiat drawings and specifications of an airplane which had not appeared in the Korean war and consequently was not "compromised."

The licensee agreement, under which North American gave the Italian government rights to assemble 50 Sabrejets, is a source of worry to certain USAF officials, principally because this industrial city in the heart of the Po Valley is known as the cradle of Italian communism.

Although Carlo Cavalli, manager of Fiat's international division, who is monitoring the Italian F-86 program, told American Aviation that all employes assigned to work on the Sabre would be screened for security and that all work they complete will be inspected by both USAF and Italian air force officials, the American government has apparently decided to play it safe. As a result, the 50 airplanes which Fiat (which was reassigned the licensing rights by the Italian government) will deliver will resemble the F-86D now in production by NAA but will actually be far inferior.

Fiat's F-86 will be an F-86K using 30-caliber Hispano-Suiza machine guns for armament rather than the rockets used on the F-86D. In addition, the radar equipment to be used in the Fiat version will be relatively obsolete, with some of the fire-control devices dating back as much as eight years.

This is how Fiat's participation in the Mutual Security Agency's program to develop European aircraft production sources and permit European countries to earn dollars shapes up at present:

- **The Italian automaker** will be assigned virtually all of the $22.5 million dollar F-86K assembly contract granted Italy about four months ago.
- **NAA will build** two complete F-86K's, test-fly them, and then disassemble one for shipment here and subsequent reassembly. First model is due to be reassembled in mid-summer of 1954.
- **The Inglewood, Calif.,** firm will send complete major assemblies on F-86K numbers three through 10 to Fiat, where they too will be put together.
- **Planes numbered 11 through 50** will be merely F-86K parts when they arrive here.

Consideration is also being given to the placement of another contract with Fiat, under which the company would start its own parts production program, but it appears that previous intimations that Fiat would eventually build the F-86K itself were premature at least.

One top-ranking USAF official in Europe told American Aviation that if Fiat were told to produce the plane on its own, the F-86K would not be in production before 1958, adding, "The K model will be obsolete enough in 1954 and 1955 when Fiat will be putting it together. It certainly wouldn't do us much good against new Russian jets in 1958 and 1959."

Fiat officials estimate that the present assembly contract will require between 500 and 600 workers. This is in addition to Fiat's licensee program on the Allison J35-29 jet engine used in the Republic F-84 Thunderjet now in operational use by several NATO nations.

Inasmuch as Allison has stopped output of J35-29's, Fiat has thus become the only production source for J35 parts, even though the USAF has stockpiled an ample supply of spare parts for the Allison engine.

The licensing agreement with Allison involves output by the Italian company of only about $10 million in J35 parts, and first shipments under the Air Force contract took place from the factory here late in June. The engine contract will call for the employment of about 650 workmen at the peak of the program, according to Fiat spokesmen.

Quality of the workmanship on J35 parts turned out so far has pleased USAF officials, but the actual number of parts to be built by Fiat is small.

The two licensing agreements differ widely in intent and type:

- **Allison's pact** is a direct one with Fiat, and the USAF contracts for J35 parts were placed not because those parts are required but simply to create a new production source, because the Indianapolis gas turbine producer is no longer in production on the F-84 engine.
- **North American's license** is to Italy, and Fiat is only working on the Sabre because it has been assigned the job, i.e., the licensing rights can be assigned to another Italian firm at any time.

The F-86K order is also unusual in that it does not follow the pattern of the NATO plane procurement scheme followed in other countries. Thus, while the U. S. is scheduled to put up about $281 million of the $550 million in overall aircraft orders, with France, England, and Belgium-Netherlands providing the remainder, Italy is not scheduled to supply any funds for F-86's.

One conclusion becomes obvious when Fiat's F-86 program is closely analyzed: it should have been labeled foreign aid rather than being included in the NATO plane procurement setup. For the plane involved will be obsolete and unsatisfactory when it is finally assembled, the contract will not really create any new plane production capacity, and the program represents merely another subsidy.

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Interview

with

August C. Esenwein

Vice President

Consolidated Vultee

• • •

Some Comments on:

• Weapons System Management

• SAM-SAC Maintenance

• Spare Parts Policies

• • •

August C. Esenwein, in addition to being a vice president of Convair, has also been manager of the firm's Fort Worth division since December, 1950. As such he has shepherded over 300 intercontinental B-36 bombers through production, directing over 20,000 people and meeting a monthly payroll of some $8 million. He is currently deep in the heart of the problems associated with Convair's delta-wing, supersonic bomber, unofficially identified as the XB-58 "Hustler." Not the least of these problems is the new procurement program known as the Single Prime Contractor Policy, which is getting its trial run at Fort Worth.

Prior to service in the Air Materiel Command during World War II, Esenwein had been a student at Yale, a fixed base operator in Buffalo, a liaison engineer for Curtiss-Wright, and a manager for a tool-manufacturing company. Back in civilian life after the war he helped form Aviation Maintenance in California, then joined Piper Aircraft as general manager. He moved to Convair in 1950.

Q It is my understanding you have three major programs which Convair has undertaken in Fort Worth which are bellwethers of future industry activity. What are they?

A. The first program is contract maintenance. We call this our SAM-SAC program; heavy maintenance on B-36 aircraft and their continual improvement and modernization on a retrofit kit basis. The second program, known as the "single prime contractor policy" of ARDC, relates to all of the preproduction activities incident to building a supersonic bomber. The third program, which is more or less in the proposal stage with the Air Force, has no name but relates to the continued support of the B-36 through its future operating history as far as spares and bits-and-pieces are concerned.

Q. What is the weapons system concept as distinguished from the single prime contractor policy?

A. The weapons system concept gave rise to the weapons system management concept, which in turn dictates the single prime contractor policy. In short, as we understand it, weapons system management and the single prime contractor policy are practically interchangeable terms. We believe that because a certain onus has attached itself to the phrase "weapons system management," and because the phrase implies that more authority has been given to the contractor than is actually the case, the USAF prefers to use the phrase "single prime contractor policy."

Q. Would you elaborate on this single prime contractor policy?

A. Yes, the development preproduction activities relating to the supersonic bomber embrace the single prime contractor policy (SPCP). AMC is not committed to it. It places in the hands of the contractor the responsibility for delivering to the Air Force, in toto, a supersonic bomber, including all its related ground equipment, training aids, spares, etc. It places with the contractor the necessity for finding, developing, buying, and installing all those items of equipment which under previous concepts have been referred to as GFAE (government furnished aircraft equipment).

Q. What will be the relative participation of Convair in this procurement of system equipment under the new program as contrasted with the old?

A. In the B-36 program the GFAE equipment represented about 50% of the total plane cost. If you take $3½ million as your base point, the government was furnishing about $1¾ million worth of GFAE for each unit delivered and Convair was doing about $1¾ million worth of work—building the airframe, installing the equipment, and delivering the finished article.

Under SPCP, as it is projected around the supersonic bomber, Convair is to procure all items that go into the airframes and construct the airframe; the only big item that the government will furnish will be the engine. In this case Convair will have the responsibility of providing about 90% of the airplane.

Q. Doesn't that put you in a completely different relationship with the manufacturers of such things as navigation systems, instrumentation, landing gear, etc?

A. Yes. These companies, who heretofore have dealt directly with the government, or with the Air Force, selling their equipment on a direct basis, will now provide that equipment to Convair.

The main job: 'Integration'

Q. How do you determine what equipment the airplane is going to require?

A. The Air Force sets up the General Operational Requirement for a particular weapons system, based on an earlier design study directive. This requirement specifies the ultimate use to which this weapon's system is to be put. The GOR is, of course, submitted to many contractors, and proposals are received wherein the contractor has specified in some detail just what his airplane or his idea of the answer to this GOR should be. In making this proposal such things as the type of arming and navigational systems, communications equipment, etc., are all specified.

Under SPCP it is still the government's final responsibility in all cases to say "We will buy this," or "We will not buy this." We are simply the proposers. Obviously the things which we propose are those things which we feel after long study will best meet the requirements.

After a proposal has been made by a contractor and a contract awarded, you then proceed to sit down again with the Air Force and dissect the airplane into several subsystems, bombing and navigational systems, for example. After the award you also sit down with the Radar Development Center and write generalized operating specifications for that particular system.

In the case of the supersonic airplane we were proposing a rather unique and certainly a novel type of bombing and navigational system which will be suitable to the high speed which we plan to build into the airplane.

We will select the vendor having the best capabilities, the Air Force approves the selection and we, Convair, then enter into a subcontract with this company to develop, prototype, and manufacture the entire bombing or navigational system.

This is always done with a view toward seeing that this particular system integrates forward with all other systems planned for the aircraft. The main job is one of integration.

Q. How is the financing handled? For example, who pays Eclipse for developing the electrical system? Do you pay them out of your money or does the Air Force pay them?

A. Well, that relationship is handled the same as any other subcontract. The contract is between ourselves and Eclipse. They have the contract, let's say, on the CPFF (cost plus fixed fee) basis; they present their vouchers to us; we pay them the entire sum and turn right around and revoucher the government, who pays us.

Q. The contract price of an airplane is in the order of half the actual price of the airplane today. The rest of it is wrapped up in engines and other GFE equipment. Does this mean that the dollar volume of your sales is going to double?

A. That is right; the apparent volume of business that we are doing will be distorted in this respect.

Q. It would appear that this will have an effect on relationship of sales to profits, on basic financing stability, and other factors.

A. On the surface it would appear that under the weapons systems management concept as it's implemented under SPCP a given contractor would be doing twice the volume of business that he had been doing previously. However, the assumption of the added task that is involved in securing all the subsystems that go into the airplane does not generate the same rate of profit that is inherent in the task as we knew it before SPCP came into being.

For example, in the case of the B-36: $1¼ million a copy; for work that Convair did we got a six per cent fee on this. Now we are supposed to go out and buy those items which used to be GFAE and now are company furnished equipment: this in turn is another $1¼ million, but we don't get six per cent on that. We only get four per cent, or maybe even less than this on the development phases, and probably only two per cent on procurement phases, if this is ever applied to a production airplane.

Q. What is the basic justification for resorting to SPCP?

A. There are three good reasons: to get a better airplane, sooner and cheaper. Over the last two decades, the time involved in taking an airplane from the drawing board to the point where it can go out and do a job has been increasing.

Prior to the beginning of World War II we were able, from production go-ahead, to engineer, tool, build, and fly a B-24 in approximately 12 months. Since then these 12 months have doubled. In the case of a recent medium jet bomber, for example, it took 48 months to accomplish the same thing.

With a supersonic vehicle this time might be as long as 65 or 70 months. Were this time to be expanded the chances are that you would be developing a weapons system which would be obsolete before you even got it in operation.

It becomes very necessary to shorten this time. SPCP proposes to do this through the elimination of doing things in series and the elimination of a great many time-consuming practices.

Q. Then there is an alternative program?

A. Yes. As you know, there has been considerable analysis and study, both by the Air Force and by the aircraft industry, as to means of bringing airplanes into being more rapidly. A philosophy and policy has evolved. I refer to what has been dubbed the "controlled production buildup." This plan calls for a slow rate of production initially, but it produces a relatively large number of aircraft for development testing early and during the same time the tooling up for quantity production is occurring.

By keeping initial production low and simultaneously accelerating development and suitability testing, all of the major "bugs" are recognized early, and corrections resulting in major modifications are fed back into the production line. The line is then ready to accelerate production on a relatively stabilized article.

Q. What happens to the AMC and the ARDC and the other multiple government agencies which now have as their main purpose in life the handling of design and specifications relating to GFAE equipment when the manufacturer takes over these elements?

A. I have heard it said in many quarters of the Air Force that the present system, as we all know it, is getting to be so ponderous as to tend to defeat its ultimate purpose through its sheer cumbersomeness. I find a lot of thinking in the Air Force that contractors must be hired to share in the management load. But the delegation by the Air Force of some detail to a contractor does not necessarily change its primary responsibility to itself.

Q. Is this the industry's first approach to a single

prime contractor policy?

A. You can say that the Wright Brothers were the first people to use the policy of a single prime contractor. After all the airplane that they delivered to the Signal Corps was a complete weapons system. Today your producers of commercial aircraft also practice the single prime contractor policy.

Now in the missile field this same concept has been applied to a degree. Generally speaking, the companies who have missile contracts have had a good deal of autonomy in the development of their particular missiles. After all, in the missile the airframe is a very minor portion of the vehicle. The guidance and navigation, the launching system, all of these things are far more important than the airframe itself. Because of the close integration of these systems with each other and into a small geometric package, the missiles people had to resort to this concept.

Perhaps we should say that SPCP as it applies to the B-58 program is the first time the Air Force has formally announced or formally stated that they are trying this system with relation to a weapons system of this magnitude.

Q. How is the relationship between Convair and the Air Force going to be handled?

A. As the situation has been explained to us, the Air Force is setting up a Joint Project Office, which is the focal point for their handling of this particular program. At the present time the Joint Project Office is manned by ARDC and AMC personnel. It is presumed that each time Convair has a question relative to this program, be it financial, contractural, technical, or administrative, these questions will be referred to this Joint Project Office. This presumably is our sole point of contact with the Air Force, where the questions are asked and the answers given.

We understand that the Joint Project Office has access to all organizational elements of the Air Force, and goes to these elements as required to secure the answers to the questions that we have asked or to secure decisions that they deem necessary.

As far as the contractor is concerned, we have set up posts within our organization on a similar project basis to handle this particular program across the board within the entire operating division. We have designated specific people in specific spots to deal with the Joint Project Office: a specific man, for example, in our contracts organization; a specific man in engineering, who is the project engineer for this program; a specific man assigned to the division manager, who is known as program director and who in effect is the eyes and ears of top management on a see-to-it basis to see that this program receives the attention and prompt handling that is required within the division.

In our relationships with our subcontractors, from whom we buy our subsystems, again we have on a project basis within our own organization various people specifically designated to handle these relationships.

Q. Was there a need for a basic change in your own organization to adapt it to this system?

A. Yes, there most assuredly was. By way of explanation you have to recall something of the history of the Fort Worth Division. During the last six years its project here has been the manufacture of the B-36. To do this efficiently we have had what is essentially an out-an-out manufacturing organization. When SPCP was piled on top of this work, there were quite a few changes which had to be made in order to enable us to discharge this function. Well, obviously the nature of our task had changed and, therefore, we had to change our organization.

The new task involved in several areas, notably in procurement, a considerably heavier load. As a result of SPCP there is a great deal of R&D effort involved in the technical lines of work that we were doing here; our capacity necessarily had to be tremendously expanded; certainly our contractual relationships with the Air Force were also new and novel.

The overall management problem from a division viewpoint became more complex, more difficult, with new facets added and new types of functions installed. Obviously a rather sweeping reorganization was in order.

Q. Could you give us any idea of what happened to the so-called project engineer under this program, as compared with his earlier functions?

A. Since the founding of the Fort Worth Division in 1942 we have always employed the concept of a project engineer. His efforts were augmented by assistant project engineers, and this group existed organizationally at fourth-echelon level within the engineering department. During our reorganization, a chief project engineer for this supersonic bomber program was created, a post which is an echelon higher in the engineering organization. He was assigned more authority than the project engineer formerly enjoyed.

Q. Where is this Joint Project Development Office located physically?

A. Physically located in Dayton, at Wright Field.

Q. What level of man is to head it up?

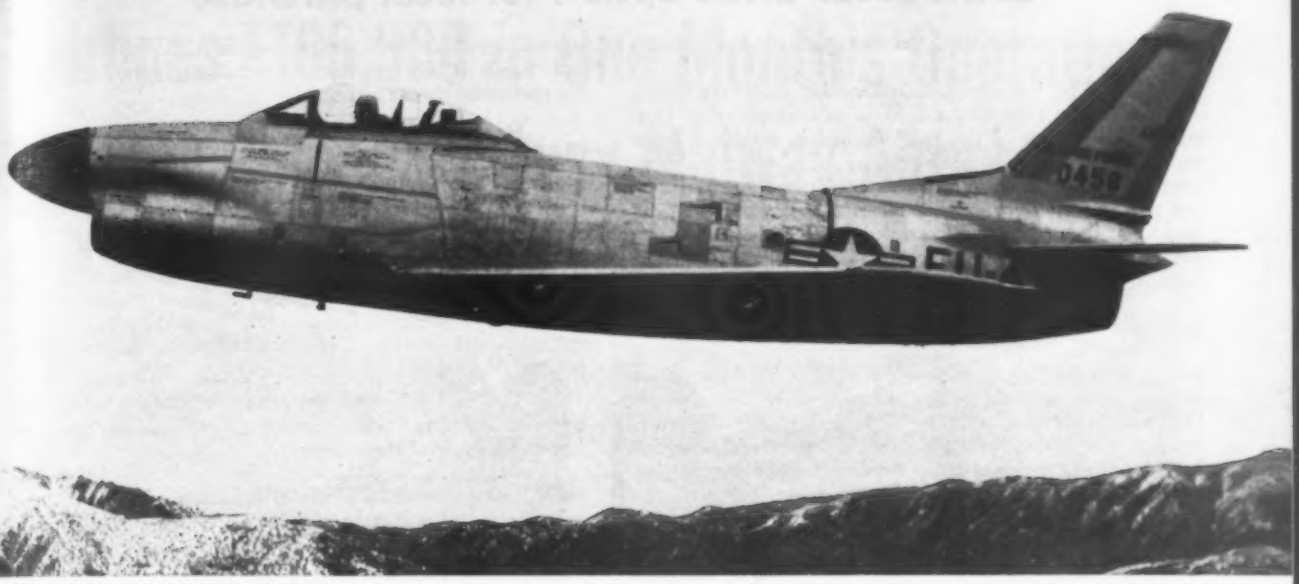
A. The present officer in charge of the Joint Project Office is Lt. Col. Joe Howell, an excellent young officer. General Boyd, commanding officer of WADC, hand picked him for the job, I am told. He in turn is supported by Lt. Col. Frank Wright, who is the AMC representative. Colonel Wright was formerly head of the B-36 buying office in the AMC set-up.

Q. Under the earlier system Convair bought all of its own basic materials—sheet metal, sheet aluminum, etc. It also bought a good deal of off-the-shelf equipment—rivets, clamps, and that type of item. Could you list the items which were previously considered in the GFAE category which will be affected by this change?

A. Well the type of item I think you are referring to would include categorically engines, engine accessories (such as starters, generators, constant-speed drive mechanisms, propellers, and propeller control mechanisms), instruments, radio equipment, bombing and navigation equipment (the entire K system in fact), radar, defensive armament equipment, wheels, tires, tubes—in fact practically all the items that went into the B-36, for example, other than the sheet metal, AN Standard nuts, bolts, screws, clamps, and things that you earlier referred to.

In the B-36 program there were relatively few items that Convair bought and caused to be developed which were CFE. In watching the industry picture for the last 10 years there has been a very definite tendency to make more and more items on all airplanes GFE as contrasted to CFE.

Q. Doesn't this seem to establish quite a different relationship between Convair and the rest of the industry? Not



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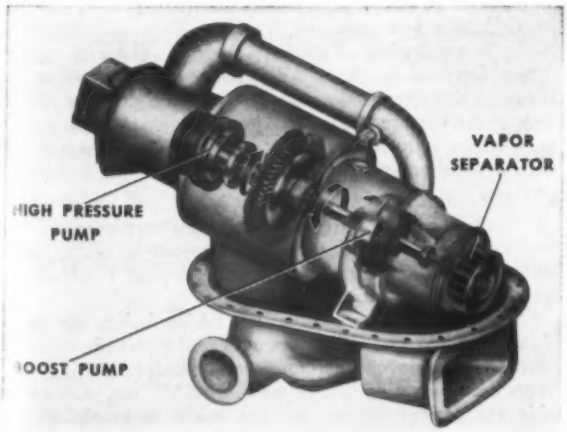

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the basic aircraft industry, but the parts and accessories industry?

A. Well, it is a peculiar relationship under the former concept. I again refer to the B-36 as an example of it. During the life history of the B-36 we had in residence representatives of the engine manufacturer, the propeller manufacturer and the defensive armament equipment manufacturer, and these were service representatives who saw to it that difficulties as they arose were corrected, reported back, and that some action was taken. Generally speaking, these people were furnished as part of the contract which the equipment supplier had with the Air Force to ensure proper use and installation of the equipment which they furnished.

Now under SPCP we have at the plant at the present time representatives of the various companies from whom we are purchasing the major sub-systems of the airplane. Our vendor for the bombing and navigational sub-system has a representative here. He is not a service representative, he is an engineer, because the earlier phases of our relationship between the vendors and ourselves relate basically to the development and prototyping of such a system.

Therefore, in the initial phases, people that they will have at our factory will be largely engineering people. As these programs move away from development and prototyping toward production, they will again get back into having their service representatives here.

One thing that is new is that we now have representatives at the vendor's plants on a see-to-it basis to see that our programs are getting the proper attention in their factories.

Q. How will Convair bridge the gap between phasing out of B-36 production and production of the new bomber?

A. As the B-36 phases out, and the phase-out date is at the end of '54, prior to the time that the new supersonic bomber can or may go into production, we develop quite a valley in the work that we have to do here. This valley is commonly referred to around Fort Worth and in the corporation as the "Fort Worth bathtub."

To fill this bathtub, we have done quite a few things: we have solicited work from other airplane manufacturers on a subcontract basis, particularly in the tooling areas; we have caused the San Diego division, which is overloaded in certain areas, to give us work; we have done all we can to find work to hold our management and production together. The largest chunk of work that we have fastened onto so far has been the so-called SAM-SAC program, which is nothing more or less than performing heavy maintenance and modernization for the Air Force on a contract basis.

Q. Just what does contract maintenance involve?

A. First, each B-36 airplane in the operating fleet is scheduled and cycled to come back to this facility once every two years. The first time that it comes back it receives one-third of a major overhaul. One-third of the airplane by area is given a major overhaul; the other two-thirds of the airplane are given the 100-hour inspection called out as an X2-6 in the tech order. During the first cycle we go over all the wing areas, including powerplants, except the fuel tanks. Everything in these areas is completely reconditioned to zero time. The second time the airplane comes back we go into the gas tanks and the oil barrels and the main landing gear and give them a major overhaul. The last time the airplane comes back, the fuselage and the forward and aft cabins are given their overhaul.

On a predetermined basis by agreement with the AMC and SAC and WADC, certain modifications or modernizations which SAC desires, which AMC agrees to buy, and which ARDC agrees are technically competent, also are performed on the airplane.

Q. Can you give me some concept of the manpower requirements of this type program compared with those of constructing basic airplanes?

A. It takes roughly 190,000 man-hours to build a B-36 at the present time. We are pretty well down on an 80% learning curve on this airplane. The first airplane was 1,000,000 hours; three years ago we were taking 350,000 hours; today we are taking 190,000 hours, 40,000 of which are subcontract and 150,000 of which are in the plant. Each of these cyclical overhauls is estimated to be about 55,000 hours.

Q. Isn't this work the same work that is being done by such outfits as Pacific Airmotive Corp.? Is this going to knock out some of these firms?

A. No. I don't think so. It runs this way: 143 wings, or 120 wings, worth of airplanes is a lot of airplanes. If you take the depots and their capacity, (I think the AF estimates the depot capacity to be 20% of what is required to take care of 143 wings), plus the capacity of all known civil contractors —at the maintenance peak—the total is wholly insufficient to cope with the problem. You will have to start utilizing the factory facilities and people to get the job finished.

Q. What does "SAM-SAC" stand for?

A. It could mean two things; I will give you both and you can take your pick. Originally it started out as a contraction of the San Antonio Air Materiel Area and Strategic Air Command, which is foreshortened to SAM, meaning San Antonio Materiel, and SAC, Strategic Air Command. More recently someone decided that this means Specialized Aircraft Maintenance—Strategic Air Command.

Q. This again would appear to place Convair in a new purchasing role where you will be doing purchasing for a good deal of maintenance supplies such as cleaning materials, replacement electrical wire, etc. Is this going to be GFE or is this going to be CFE?

A. SAM-SAC is the fifth modification program—maintenance program—that Convair has performed for the Air Force: first was B-36 A to E conversion; second was B-36 B to D conversion; third was Project SAN-SAN; fourth was Project Worthmore; and fifth is Project SAM-SAC. There was one in between called Project Fixit, which was taking care of those planes that got damaged by the high winds here a year ago.

In conducting all of these programs, there is very little option for local purchase. All items required as replacement items on the aircraft were drawn from the depot supply system, and there are only a few items, such as cleaning fluids, rags, safety wire, cotter pins, etc., which we normally furnished as short supply items, and which we continue to procure.

Q. Since you are now taking military overhaul work and putting it into your production space to fill in this so-called "bathtub," what happens when your production requirements again increase?

A. Correction: we are not taking it into the production factory. We have facilities outside the plant in which this work will be done. Therefore we are simply moving people from the production line to the SAM-SAC line, which is outside the factory. When we get ready to crank up on a production program again, we will move back inside. Key

Gilfillan Radar Traffic Control Saves Airlines $100,000 in One Month's Operation at Chicago's Busy Midway Airport

Formerly, aircraft flew over airport for orientation, circled in to landing beam—a system resulting in aircraft "stacking," delays. Today, Gilfillan Radar guides aircraft direct from 30 miles out to touchdown.

"Delays in landing air liners at Midway airport in bad weather have been virtually eliminated thru the extended use of radar aids by the airport's air traffic controller team, often cited as best in the nation," writes Wayne Thomis, Aviation Editor of the Chicago Tribune.

In December, 1952, without radar control, aircraft lost *283 hours 58 minutes* flight time milling over radio "holding points." In January, 1953, with radar traffic control, "holding time" was reduced to *4 hours 26 minutes*. Weather conditions during the two months were almost exactly comparable.

"As a result," writes Mr. Thomis, "airlines saved $100,000 in this one month; increased schedule reliability and passenger satisfaction; increased safety in Chicago's high density traffic."

Today, incoming aircraft are picked up by Gilfillan Air Surveillance Radar (ASR-1) 30 miles out, guided to final approach gate. There, Gilfillan GCA Radar (PAR-1) takes over, guides or monitors final approach.

During several peak traffic periods, a new record for civil airports was set by landing as many as 10 aircraft in a 15-minute period.

Bob Ziegler, Chicago District CAA Supervisor, commented that combined use of Gilfillan ASR-1 and PAR-1, for traffic control as well as landings, increased safety by pinpointing aircraft position in a 30-mile radius and achieving positive 3-mile separation between aircraft. Gilfillan Radar also allows PPI landings on any runway at the airport. The PPI landing was also pioneered at Chicago.

Credit goes to CAA, the Midway Traffic Controller Team and the Airline Pilots who participated in the six months experimental period that perfected radar traffic control at this busy airport.

In GCA, Radar and Electronics Research, Design and Production—

the FIRST name is... Gilfillan

Los Angeles

GCA

Spare parts: We have made . . . forward-looking proposals'

people can be spared from the SAM-SAC program to form a nucleus for building up a new production team. This assumes that your production goes down to zero, which it does not quite do.

Q. In any production build-up, you are still going to have to take back 25% or so of the personnel who are diverted to SAM-SAC work?

A. This might or might not be the case. It would depend entirely on the level to which production activity within the plant had degenerated. If you assume that there is to be no production work as such at the Fort Worth plant between the time that the B-36's phase out and the time that the supersonic bomber phases in, you would have obviously lost or laid off your entire production team.

To recommence production under these conditions would obviously mean that you would have to draw people from the SAM-SAC program to form the nucleus around which you would commence to reconstruct your production team.

Q. Since you are the manufacturer of spare parts for the B-36, and since you are now going to be the major agency doing repair and overhaul on them, doesn't this lend itself to some additional possibilities?

A. Yes, we think it does. We have made certain specific and forward-looking proposals to the Air Force in this area of activity. First, the B-36 is going out of production and as it goes out of production the space that the B-36 tools occupy is eventually going to be needed for other or later production work. Therefore, the tools will eventually have to be moved. When you move the tools you then face the problem of how to store them, because as you get orders for spare parts you are going to have to pull them out of storage and set them up in order to make the spare parts. This has raised the question of what do you do for the next five or six years while the B-36 is still the first-line operation aircraft in way of supporting it with a proper spares program.

Up to now, after an airplane had gone out of production the Air Force continued to buy spares on a call basis. We have pointed out to the Air Force that this is a very, very expensive thing to do—to order one of everything as you need it—particularly so since your tools are in storage and you have to pull them out each time that you want to make one of something.

We consequently made a specific proposal to the Air Force which they are presently considering; it goes like this: No. 1, there should be sufficient history, so far as the B-36 is concerned, so that based on depot, operational, and factory records you can pretty well determine what your spare parts consumption will be. There are sufficient data and knowledge now to do this. Step 1, then, is to formulate a long-range spares-requirement program in which the items and quantities are specifically listed, with due regard to the obsolescence factor.

Having made such a study it would then become obvious that the various types of parts would break themselves down into specific categories, the categorization being their applicability or ease of manufacture. For example, take a rudder. You can pretty well see there aren't going to be many changes on it during the next five years, and therefore within physical limitation it is far cheaper to order five years' worth of these rudders based on your spares consumption data than it is to order them one at a time for five years.

So phase No. 1 is a study of what parts are required in what quantity for the life of the airplane, as best it can be determined. From this then stems a further analysis by category of the cheapest way of buying these.

Do you buy them on a call basis (you will some of them); do you buy others, all five years' worth, at one time; or do you, for example, in the case of the rudder, buy all the castings and forgings that you will need for five years' worth, machine them, and put them on the shelf, and assemble your rudder as the call comes in?

All this is subject to very specific detailed analysis. From that you can determine what tools shall be stored for long-range, what tools may be destroyed and gotten out of the way, and what tools shall be kept in quick-turn-over condition—where you can get your hands on them quickly and put them back again when you are finished with them.

This then determines your tool storage policy and the facilities you need for them. Following this you have to provide space within your factory where you can bring these tools without interfering with your other work.

Short Order Shop

Just suppose you have the C-123 in here and it occupies two thirds of your factory. It would obviously be impossible to pull out a table-top jig for making a circumferential down here for your C-123B program, get a B-36 tool, put it in place, make the B-36 part, and keep switching tools all over your plant. You have to have a localized or short-order shop, as we call it, for spares manufacture, which in the case of subassembly and assembly should operate independently from the rest of the factory. There is a community of interest in manufacturing your details in your present shop under your present shop policy system. So you come to the proposal of a short-order shop.

The question then arises as to how you distribute these parts. Since the SAM-SAC program is one of the principal consumers of these parts, it seems senseless to make the parts, ship them to a depot, and then turn right around and ship them back to Fort Worth.

Under the present system everything we manufacture here is shipped to San Antonio, which is a specialized depot for class 01-B parts, 01-B being Convair-manufactured B-36 items. They are shipped then on call from the depot to the using agency. It happens that the SAM-SAC program uses a lot of these parts and that the two wings of aircraft stationed at Carswell, immediately across the field, constitute another major user of these parts. So we have suggested in the interests of economy and saving a lot of time that the Air Force warehouse all 01-B parts and materials here at Fort Worth and that we become the centralized distributor.

Beyond this you come into the question of the purchased items—nuts, bolts, screws, standard items, and such things as that—which are not 01-B but AN. We don't contemplate nor advise that these parts be handled out of Fort Worth, but that they continue to be carried by the depot. The same thinking would apply, say, to an actuator. There is no reason why this actuator, which might be used on four other airplanes than the B-36, should be stocked here. This again should remain in the depot. What we are talking about is 01-B parts and those purchased items which are peculiar to the 36, and used only on it. This, if adopted, provides a pretty clearcut policy of applying logistics incident to the maintenance of B-36 airplanes on the most economical basis. • • •

TARGET: SUBMERGED SUB

NIGHT, FOG, and the sea cloak an enemy submarine. But above the low undercast, a Grumman S2F-1 hunts with electronic gear that detects and plots and feeds information to the four-man crew.

A fix! The unseen sub is pinpointed.

The Navy's new twin-engine plane banks away and returns. A torpedo arcs into the fog. It dives under the water, "homes," and hits.

The flight back takes many hours for the S2F-1 has patrolled far. Then she finds her small carrier in the dark and lands.

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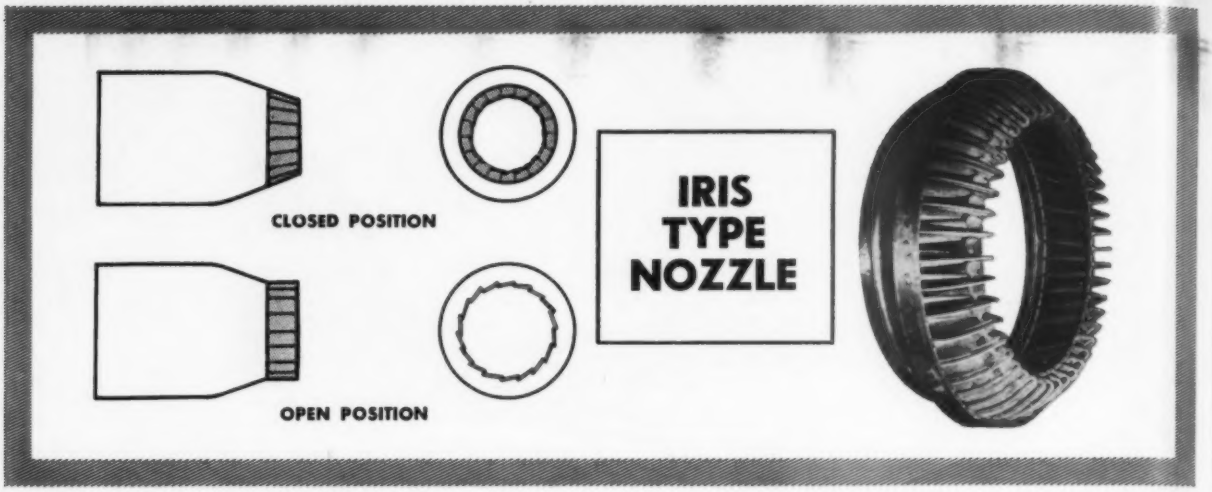
DESIGNERS AND BUILDERS ALSO OF THE PANTHER AND COUGAR JET FIGHTERS, AND THE ALBATROSS TRIPHIBIAN



HOW IRIS NOZZLE closes to reduce area of jet exit is shown above.

The Iris Nozzle: Answer for Jet Control?

Variable area exit makes possible quick power adjustments, greater fuel economy, designers claim.

By WALTER A. KILRAIN

WITH the increased use of afterburners and water injection, the need for a means of controlling more precisely the power output of a jet engine has increased. Likeliest answer has seemed to many designers to be the development of a variable-area exit nozzle. After a study of nozzle types, two engineers at Marquardt Aircraft Co. have come up with what they believe to be the best answer yet: the iris nozzle.

Use of a variable nozzle permits the pilot of a jet to cut his power down for landing, while still keeping the engine turning over at full speed. If he has to reject the landing and go around again he can open the nozzle and immediately have full power available. In present engines the rotation of the turbine must be slowed during the landing approach; bringing it back up to speed in case of an emergency is a dangerously slow process.

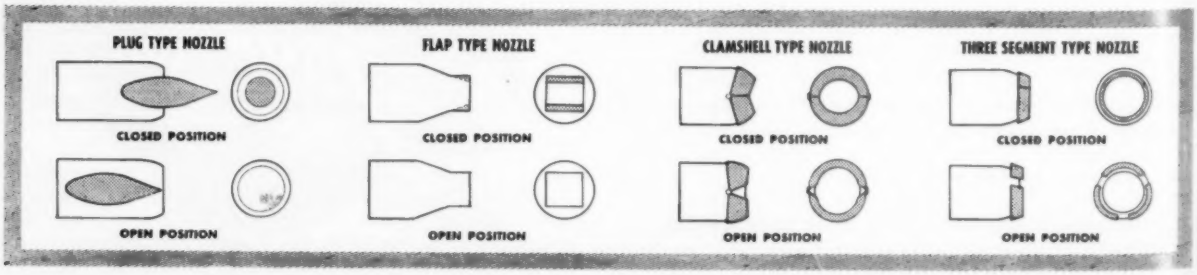
The variable nozzle will also permit the maximum thrust to be obtained, regardless of ambient temperature, during take-off, and over a wide range of inlet conditions. Greater fuel economy, cooler engine starts, faster acceleration to engine speed, and adjustments to allow for variations in thrust between various engines on a multi-engine jet aircraft are all other prospects for the variable nozzle.

The iris nozzle, opening and closing like a camera shutter, comes out ahead of other nozzle designs on several points, according to Richard G. Laucher, afterburner section supervisor, and John S. Winter, afterburner project engineer at Marquardt. Among its advantages:

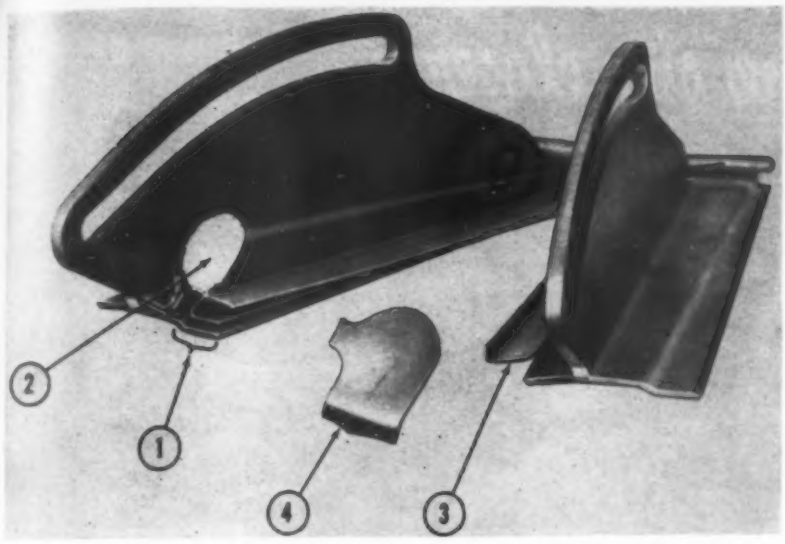
- **Internal efficiency** that approaches that of a fixed nozzle;
- **Maintenance of a circular opening** in all positions;
- **Segments** that can be precision cast for quantity production;
- **Efficient sealing** against gas leakage;
- **High tolerance** for thermal distortion in the individual segments of the iris;
- **Minimum diameter** in the external profile;
- **Adaptability** to ejector cooling design.

The iris thus comes out ahead on most of the important design factors. In terms of internal efficiency Laucher and Winter were aiming at a figure close to that of the fixed, conical, converging nozzle, the optimum design for today's pressure ratios. The circular jet stream is desirable in order to avoid buffeting or interference between the wakes of several engines. Fairing the engine into the airplane is facilitated by a relatively small external diameter.

Balanced against its strong points are two weaknesses of the iris type: its mechanical complexity resulting from the number of parts, and the relatively high force needed to actuate it. The weight of the evidence, Laucher and Winter are convinced, lies on the side of the advantages.



VARIABLE NOZZLE TYPES which were considered and rejected during study.



PARTS OF SEGMENT are shown above: (1) protector flap; (2) fiberglas plug; (3) flame shield; and (4) end plate. Flame shield was added last, after tests showed segments failing due to temperatures around 1700° F. at bellows base.

The steel segments of the iris are hinged to a supporting ring and are moved forward or backward, altering the area of the nozzle, by another ring, to which they are attached by cams and rollers. From the top of each segment rises a vertical member with a slot cut in it for the cam; this piece also carries off heat from the segment and stiffens it. The segments are connected to one another by means of a type of bellows, which permits them to move circumferentially and which forms a seal against the escape of exhaust gases.

Sealing the gases in was one of the major problems in the design of the nozzle. At first the effect of the internal pressure on the overlapping flaps was considered, but high friction forces, close tolerances that would be required in the actuator mechanism, and possible warping around the edges of the segments combined to make this idea appear impractical.

The bellows were originally made of Type 347 stainless steel, spot-welded to the segments, and lacking the protector flap, the fiberglas plug, the flame shield, and the end plate which are shown in the picture above. The open area inside these elements turned out to be a flameholder, however, and the additional parts were added, with the exception of the flame shield.

"Under the test conditions," report Laucher and Winter, "the nozzle exhibited a fair endurance, averaging approximately fifty-five hours of engine operation, of which five hours were run with the afterburner operating. The failures were all due to bending fatigue and they occurred in the bellows base radii. Upon investigation it was determined that a temperature of 1600° to 1800° F. occurring at the bellows base radii was contributing to the early failure." As a result of this discovery the flame shields were added, and the bellows material was changed to a high-temperature alloy. The nozzle seal is now reported to be satisfactory.

The actuation system is based on the coordinated radial movement of the segments. The cam slot arrangement keeps actuator forces nearly constant in all nozzle positions. Since the nozzle area increases approximately twice as fast for a given displacement of the moving ring when the ring is near the full-open end of its travel, the engine and afterburner combination is "approximately twice as sensitive to nozzle area changes when operating without afterburning as when it is operating with afterburning. In this manner, the relationship between the turbine-out temperature change and the actuator movement is maintained approximately constant throughout the range of control of the nozzle."

The ring which moves the cam rollers is driven by four push-pull flexible cables attached to a single actuator. The cam rollers could also be attached directly to the ejector cooling shroud which surrounds them, with fore-and-aft movement of the shroud used to expand or contract the nozzle.

The iris nozzle was selected only after Laucher and Winters had considered and discarded four other types (see diagrams on page 38).

• **Plug type:** Internal efficiency, mechanical simplicity, and external profile were all good. However a long nozzle was needed for large changes in area, there was some blockage of the afterburner combustion chamber, and the actuator mechanism and the plug itself were subjected to extremely high temperatures;

• **Flap type:** Efficiency and mechanical simplicity again were high. Large pressure loads and high temperatures, however, weighed against it, as did the sealing requirements and a poor profile;

• **Clamshell:** This design showed enough promise to justify testing. During the tests, however, the "eyelids" warped during afterburner operation, and there was considerable gas leakage. The non-circular opening and the large external diameter also led to its being put aside while other types were considered;

• **Three-segment:** Adaptable to ejector cooling shroud design, offers circular opening, less affected by warping, and seals well in the closed nozzle position. Drawback: adaptable only to a two-position operation.

Whether the iris type nozzle will prove to be the final answer in the field of variable-area exit devices remains to be seen, but Laucher and Winter are convinced that for the time being at least it promises to go a long way towards solving some of the jet engine's most pressing problems. • • •

Complete Management Change at Riddle

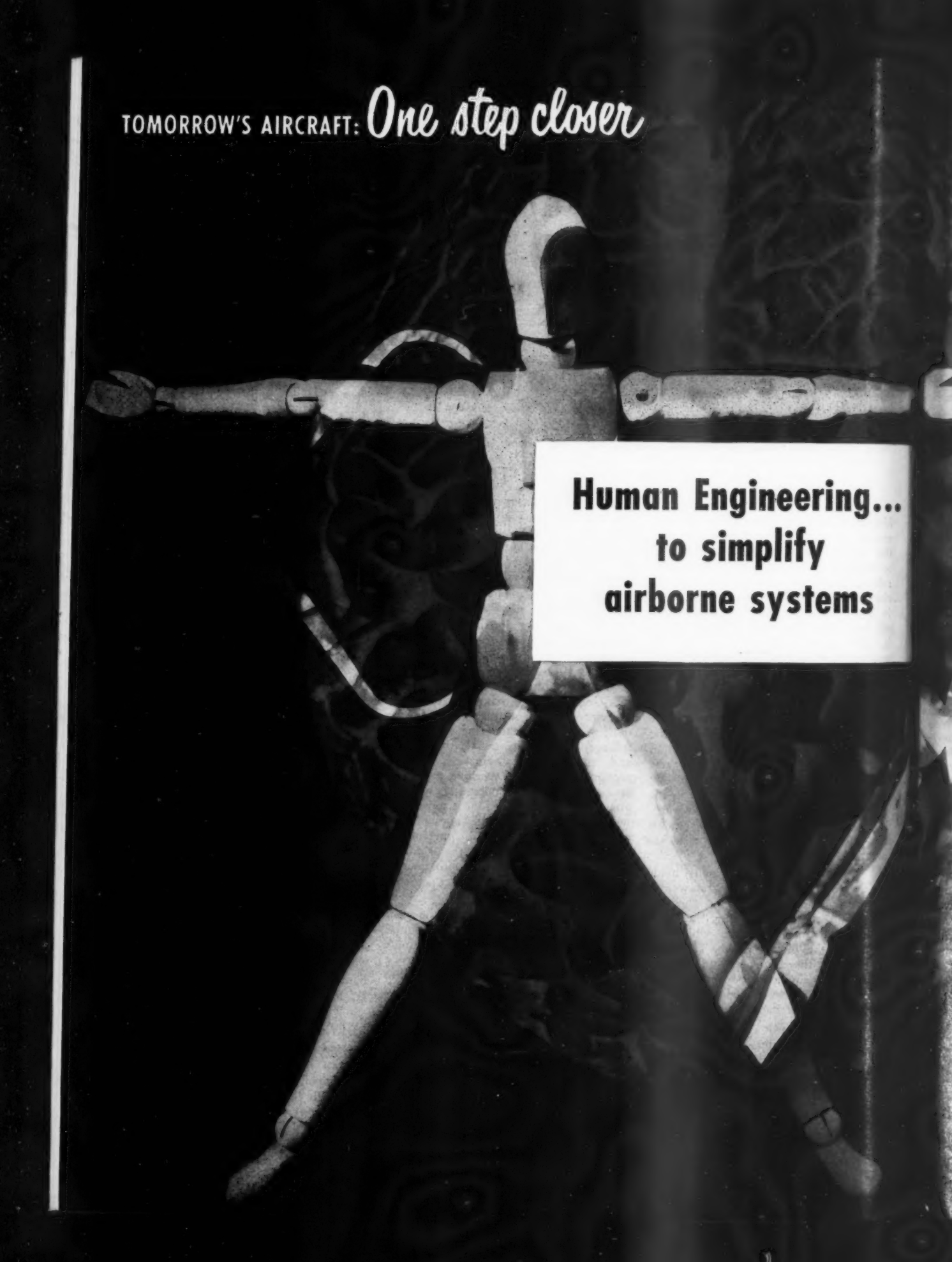
Riddle Airlines, certificated for all-cargo operations between the U. S. and Puerto Rico, underwent a complete management change recently with a former non-scheduled airline president, William R. Boyd, taking over the presidency.

Boyd succeeded Jean Helvey, who had held the presidency since May of this year. Other new officers appointed in the reorganization were Philip A. Mann, also a former non-sked official, who become vice-president; D. G. Bash, treasurer; and A. H. McClain, secretary.

Directors of the firm are Boyd, Mann, McClain, Fletcher Godfrey, William H. Cauley, George Martin, Joseph A. Perkins, and Benjamin Turner.

Until May, Riddle was controlled by its organizer, John Paul Riddle. He vacated the presidency when controlling interest in the firm was purchased by an unnamed Miami group. Helvey, also with the company since its organization, then took over the presidency and held it until the recent reorganization.

TOMORROW'S AIRCRAFT: *One step closer*

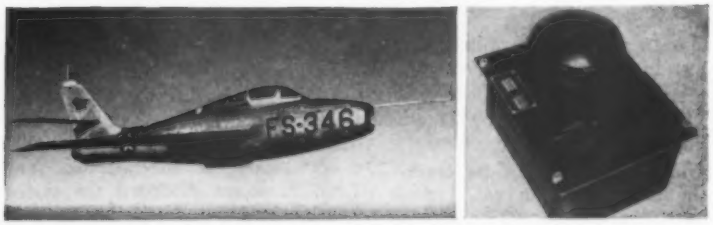


Human Engineering... to simplify airborne systems

Human Engineering has become a primary factor in the design of Westinghouse Avionics Equipment. Through scientific study and experienced evaluation of operational problems, Air Arm Division is using this principle to develop better airborne systems and permit aircrews to perform vital tasks quickly, simply and surely.

This is shown in Westinghouse Fire Control Systems. To make the equipment truly effective, it is necessary to analyze what the operator must perceive, interpret and translate for successful operation. The effects of enemy nullifying evasive action must also be considered. Specific Human Engineering studies then indicate the extent of automatic devices, placement and shape of controls, presentation of information, reaction time factors, sequence and method of operation. Such scientific facts, coupled with Air Arm experience, result in optimum compromise between operator's capability and engineering feasibility . . . and a product designed with all the possible benefits to accomplish the required mission.

This progressive concept of product design comes from Air Arm, a wholly owned Westinghouse Division, devoted to the manufacture of autopilots, airborne radar, complete fire control systems, computers and guided missile components. Complete development, production, flight testing . . . and now Human Engineering . . . facilities concentrate unparalleled capabilities on the problem of bringing more practical, simplified—and reliable—airborne systems One Step Closer. J-91011



A Westinghouse Human Engineered Autopilot is used in the Republic Aviation F-84 Thunderstreak, shown above. At right is close-up of autopilot console, designed with minimum number of controls for maximum simplicity.

THE SCOPE OF WESTINGHOUSE IN AVIATION

Basic aircraft systems

Turbojet Engines, Fire Control, Radar, Autopilots, Communication Equipment and Electrical Systems.

Ground equipment

Wind Tunnels, Airport Lighting, Industrial Plant Apparatus.

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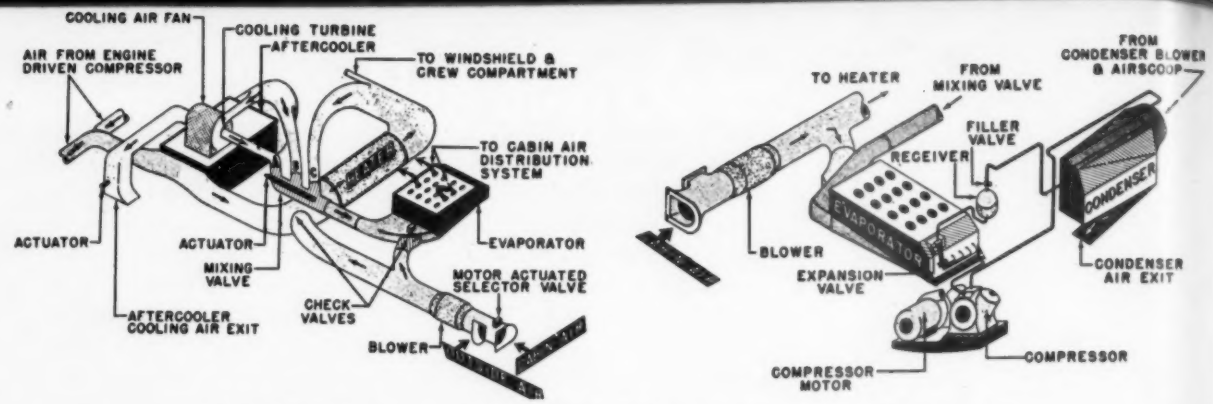

FREON SYSTEM evaporator fits in series with standard DC-6 air conditioning system design. Compact arrangement of compressor, condensor, and evaporator cuts potential leakage.

Why Douglas Chose Freon for the DC-7

System dispenses with ground air conditioning truck; alternatives weighed by airlines before final choice.

By JOSEPH S. MURPHY

WHEN the Douglas DC-7 makes its first appearance in airline service next year, its new Wright Turbo-Compound engines will not be the only mark of distinction to set it apart from its DC-6 predecessors. Another major change in system designs in the DC-7, one which calls for the installation of an airborne freon refrigeration system, promises to start a new era in passenger comfort in Douglas transports.

At least this will be the case with the 39 airplanes on order by American, National and Delta-C&S airlines.

Unlike any of the DC-6's, the DC-7 air conditioning system will include a new vapor-cycle refrigeration unit with a capacity of five tons manufactured by Carrier, Inc., of Syracuse, N. Y., in addition to the conventional AiResearch-manufactured air-cycle cooling system.

The freon system, in effect, provides a "built-in ground air conditioning truck." It completely dispenses with the need for connecting a ground air-conditioner to the airplane either when preparing it for flight duty or during intermediate schedule stops during summer operation, when aircraft cabin interiors suffer a rapid rise in temperature in a matter of minutes if not cooled.

As an airborne cooling system in the DC-7, the freon system now becomes the primary source of cabin cooling, with the air-cycle system assuming the position of a standby source for overload cooling requirements.

The combined air-cycle and vapor-cycle system was finally recommended by Douglas and chosen by the majority of airlines buying the DC-7 only after a thorough study of three possible approaches to solving the cooling problem. Douglas Aircraft Co. engineer G. T. Rowe discussed the system development in detail before a recent gathering of the American Society of Mechanical Engineers in Los Angeles.

According to Rowe, the possibilities considered by Douglas for cooling the DC-7 were:

• **A large-capacity air-cycle** refrigeration system; one airline customer specified a unit with a capacity as high as 15 tons.

• **A moderate-capacity** air-cycle system, with ground cooling to be handled by an air conditioner truck, as in previous DC-6 systems.

• **A moderate-capacity** air-cycle system supplementing a new vapor-cycle or freon refrigeration unit, or "built-in ground truck" as it is called.

Before recommending the freon system, Douglas went to great extremes to explore and evaluate each of these possibilities fully. The advantages and disadvantages of each were weighed, design layouts were made, and conferences held with the negotiating airlines.

Final choice of the combined air-cycle/vapor-cycle system came because it retained the previous DC-6 type pressurization equipment and ducting and it required a minimum of structural changes. It was a system that could be used on the ground without the engines running to precool the cabin in preparation for passenger loading, thus dispensing with the need for an expensive piece of ground equipment.

Another big reason for Douglas support of the freon system was the fact that it could be added without interfering with the system layout for those customers who were not interested in the extra cooling capacity. Twenty-five DC-7's were to be built for United Air Lines without the freon system, and if the two systems had not been compatible engineering costs would have been prohibitively high.

First consideration was given to using a large-capacity air-cycle system of the type used in all DC-6's in the past. In its favor was its good weight-to-output ratio characteristics, the lowest of any of the three systems considered. It also has demonstrated its ability to pull cabin air temperatures down rapidly.

The biggest drawback of this sys-

How Cooling Systems Compare

	In the DC-6	In the DC-7
Supercharger airflow rate	78 lbs./min.	112 lbs./min.
Ventilation—ground blower airflow		85 lbs./min.
Airflow rate per passenger	15 ft.³/min.	19 ft.³/min.
Max. cabin pressure differential	4.16 psi	5.45 psi
Air cycle refrigeration	3.3 tons	5.5 tons
Vapor cycle refrigeration	None	5.0 tons
Total refrigeration	3.3 tons	10.5 tons

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LIFE SAVER—Only a few minutes after bailing out of his crippled jet fighter, this Air Force pilot was rescued from the Yellow Sea off Korea by a Sikorsky H-19 helicopter. Such "Guardian Angels" hover just out of enemy range, ready to answer emergency calls. The rescue technique shown is responsible for saving hundreds of U. N. pilots.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

PRISONER EXCHANGE—During the exchange of sick and wounded war prisoners in Korea, Sikorsky H-19 helicopters of the Army's 6th Transportation Helicopter Company flew a steady shuttle between the exchange point near Munsan and hospitals in Seoul. Six patients were carried on each flight during the week-long operation.

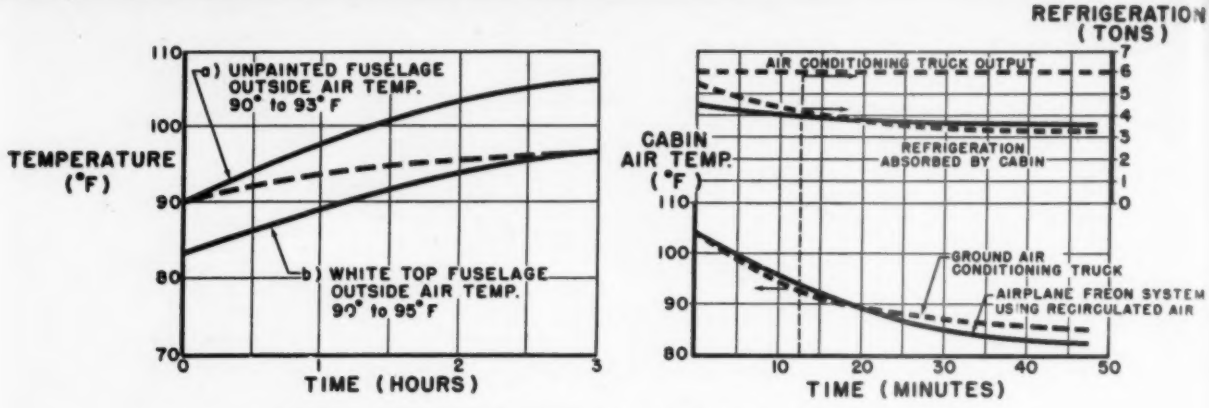
INTERNATIONAL SERVICE—Sabena Belgian Airlines in August opened the first scheduled international helicopter passenger service, supplementing its regular airline service to all of Europe, the Near East and Africa. Using big Sikorsky S-55s, helicopter flights will serve cities in Belgium, Holland, France, Germany and Luxemburg.

FAST SERVICE—With Sikorsky S-55 helicopters, the first regularly scheduled U. S. helicopter passenger service has been opened by New York Airways. In July, regular passenger flights began between LaGuardia, New York International, and Newark Airports in the New York City area. Only minutes are needed for inter-airport trips, which once took hours by surface vehicle.

SIKORSKY AIRCRAFT

BRIDGEPORT, CONNECTICUT

One of the Four Divisions of United Aircraft Corporation



PARTIAL ANSWER to ground cooling is white-top fuselage. Built-in freon system in DC-7 promises to outperform ground truck by recirculating cooled air.

tem was that the airplane's engines had to be running in order to use it on the ground. One alternative to take care of ground cooling would be the use of a conventional ground air conditioner, and another to use a ground compressor truck to supply compressed air to the turbine, as the airplane's superchargers do when the engines are running.

But the use of a ground air conditioner would virtually have cancelled the usefulness of the large-capacity expansion turbine, since once the cabin has been cooled on the ground only a moderate-capacity system is needed to maintain a comfortable cabin temperature.

The ground compressor truck was virtually out of the question, since it would call for equipment which none of the airlines have.

Another major factor that weakened the case for the large-capacity turbine was the engineering of the system installation. The design that Douglas had in mind called for dual compressors, primary heat exchangers, secondary compressors, heat exchangers, and turbines. Since the DC-7 is pretty much the same structurally as the DC-6 and DC-6B, the amount of engineering it would have taken to install the larger system, move the existing equipment, and modify the structure would have run high. New airscoops and overhead vents alone would have called for a major revision of airplane structure.

Final disadvantage of the air-cycle system is a basic one with turbine installations: they rely on the engine-driven cabin superchargers for their driving power and about double the workload of the supercharger throughout the summer months. The result is a lower reliability factor, not only for the pressurization system but also for the air-cycle cooling system, which depends on the supercharger for its operation.

Using the larger turbine would have magnified the present problem and required continuation of the practice of stocking numerous field spare compressors and prohibiting the dispatch of airplanes during hot weather unless both of the superchargers were performing properly.

The other system reviewed by Douglas was the conventional moderate-capacity turbine installation supplemented by the mobile ground air conditioner for handling pull-down loads. The biggest advantage of this system is that it offers the lowest installed weight in the airplane and its 5.5-ton capacity is looked upon as capable of maintaining a comfortable cabin under nearly all flight conditions.

On the advantage side this system would call for little modification. A slightly reworked DC-6B cabin supercharger could be used, and with higher compression ratios the same cooling turbine as is used in the DC-6B would suffice. The only major change would be the addition of a larger aftercooler and associated ducting.

Basic Assumptions

But many of the same arguments that led to the ultimate choice of the freon installation also apply to this system. The moderate air-cycle design depends on the use of a $12,000 to $15,000 mobile ground air conditioner truck to precool the cabin before passengers are loaded, and it operates on the assumption that this ground equipment is available, in working order, and that personnel are available to operate it.

Potential customers for the DC-7 impressed upon Douglas that the use of ground air conditioners at major airports is an operation almost beyond regulation. It was pointed out that in the last-minute operations of fueling, cargo and baggage loading, buffet servicing, operation of ground power supply units and passenger loading, the connection of the ground air conditioner is either forgotten or the equipment is not on hand because of heavy traffic.

As a result, it was the design requirement of one airline—presumably American Airlines, which spearheaded the development of the new system—that the DC-7 be made independent of air conditioning trucks, either by use of a higher capacity air-cycle system or by installation of the "built-in" ground truck.

The Carrier system selected for the DC-7 operates much like a conventional household refrigerator and is made up of a compressor, condensor, and evaporator. The compressor and evaporator are in the forward part of the DC-7 aft belly cargo compartment, while the condensor is in the right wing fillet fairing.

The compressor is of the two-cylinder piston type, driven by a 9.5 hp electric motor. A special feature of its design is that the compressor starts with both cylinders unloaded and suction valves are held off their seats automatically until sufficient oil pressure is available to actuate the unloading mechanism.

This same feature is used to prevent frosting of the evaporator coil. A valve which senses suction (crankcase pressure) bleeds off oil from the cylinder unloader piston so that the compressor is completely unloaded when the suction pressure drops to 30 psig, corresponding to the 32° F. saturation temperature.

In the DC-7 the freon system assumes the role of primary cabin cooling agent, with the 5.5-ton expansion turbine available for peak cooling requirements. Normally, the pressurized air from the two engine-driven cabin superchargers is ducted through the wings into the fuselage, where it is directed through a three-port air mixing valve.

For winter operation this motor-operated valve directs air to the combustion heaters for cabin heating; where more moderate temperatures are desired the valve passes the air through an aftercooler.

With the freon system installed in

the DC-7, air from the mixing valve will be routed through the evaporator of the 5.5-ton capacity system before it enters the cabin air distribution ducting. When maximum cooling over and above that normally supplied by the freon system is needed, the air will first be cooled by the aftercooler, then by the expansion turbine, and last by the freon system.

The compact design of the Carrier system in the DC-7 has already paid dividends. By locating the major components closely together, the length of coolant lines has been held to a minimum. Since every system fitting is a potential point of leakage, the fewer fittings used, the greater the expected system reliability. Because of the low expected leakage in the DC-7 system design, it has been possible to reduce the size of the freon receiver and the weight of the freon charge.

Although at first glance it would appear that the high weight penalty of the freon system, which with added electrical requirements approaches 500 pounds per airplane, would have stymied its adoption for purely economic reasons, Douglas points out features that act to offset this penalty:

• **System design for removal** of major components during winter operation would reduce the net weight penalty by almost 50% if adopted by the operators;

• **Longer supercharger** and expansion turbine life should result. With the freon system installed in series with the air-cycle system and handling most of the cooling requirements, the pressurization system operates at lower pressures and maintenance of air ducting systems is reduced.

In another sense the selection of the freon system, despite its high added weight, is strong evidence of the value placed on passenger comfort. The 500-pound system represents the equivalent in weight of 2.5 passengers and their baggage, which on a 10-hour, 3000-mile day bring a revenue return of $450. On American Airlines' fleet of 25 DC-7's, this would represent a daily income of $11,250 and an annual revenue of about $4 million.

• • •

Investigation Ordered

Investigation of an ATC resolution that would fix a maximum travel agent commission on long-haul domestic traffic has been ordered by the CAB. ATC and air carrier members have been directed to show cause why the resolution should not be disapproved.

New Pilot Contracts For Three Carriers

Three airlines have signed new contracts with Air Line Pilots Association granting their pilots pay increases:

• **American Airlines** raised captains of four-engine equipment 40¢ per hour for day flying and 60¢ night, retroactive to April 1, with Convair pilots increased 50¢ and 75¢. Pilots' gross weight allowance (per 1000 pounds per hour) was raised from 1¾¢ to 2¢. Mileage pay was unchanged, but base pay increased, as did co-pilots' percentage of captains' rates (now 40% in second year of service, 57% in eighth year and after).

• **Delta-C&S Air Lines** granted pay boosts of 50¢ per hour day and 75¢ night to all pilots, retroactive to March 1, when old Delta and Chicago and Southern contracts expired.

• **Northwest Airlines** captains on four-engine planes were boosted 25¢ per hour day and night, and DC-3 captains 37½¢. Gross weight pay increase was same as AA's. There was no change in base or mileage pay. Co-pilot's percentage of captains' rates increased (now 31% in second year, 48% in seventh year and after).

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What JACK & HEINTZ *is doing about...*

J&H announces new 1500 va unit with improved regulator for closer voltage and frequency control—adaptable to J&H Inverters now in field.

Jack & Heintz's new F137 Inverter (Motor-Generator) is the first in its volt-ampere rating to complete Air Force altitude cycling tests for 50,000-foot operation and has now been released for production by the Air Materiel Command.

Featuring an improved speed and voltage control, the F137, a 115-volt, 400-cycle, single-phase rotary inverter, delivers 1500 va output at 50,000 feet and at +20° C ambient temperature.

Improved electrical insulation, redesigned commutator and brush arrangements, new housing configuration for better air flow, and the new FRS speed and voltage regulator assembly represent major advances in high altitude inverter performance.

J&H looks to the Future

The F147, capable of 2500 va at 50,000 feet, at +20° C ambient temperature, has completed cycling tests at Jack & Heintz laboratories. We are also pioneering the design of an environmental-free 2500 va inverter for still higher altitudes and ambient temperatures, in accordance with an Air Force development contract.

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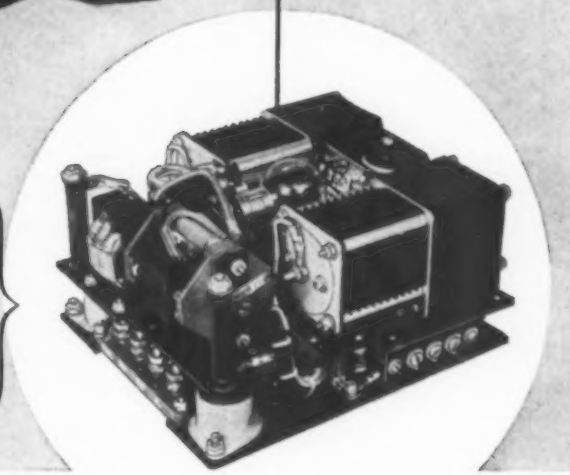

NEW FRS SPEED AND VOLTAGE REGULATOR FOR F137 INVERTER. PROVIDES INSTANTANEOUS OPERATION WITH NO WARM-UP PERIOD, VOLTAGE REGULATION CLOSER THAN PLUS OR MINUS 5% AND FREQUENCY REGULATION CLOSER THAN PLUS OR MINUS 2.5%

Rotomotive EQUIPMENT

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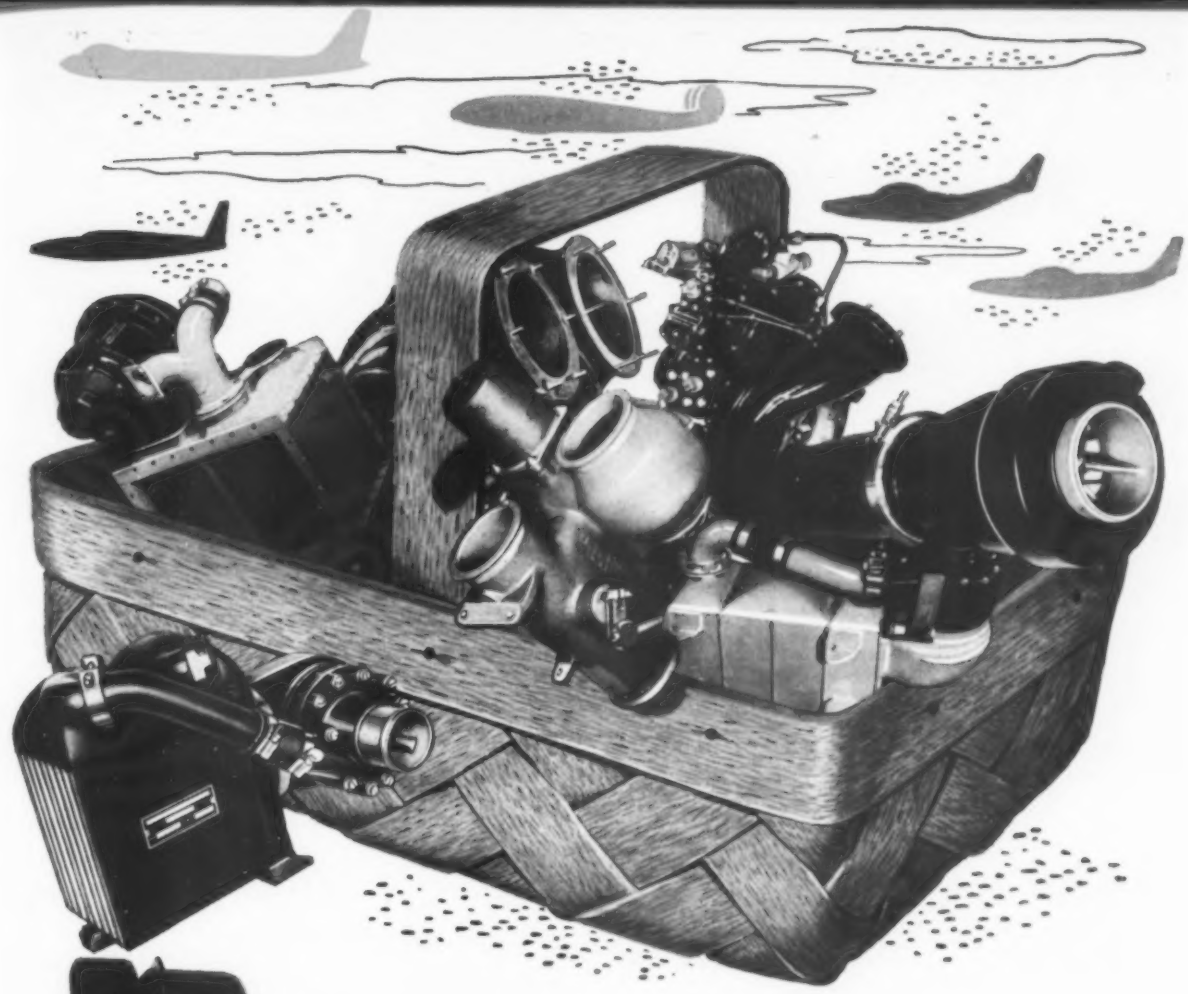

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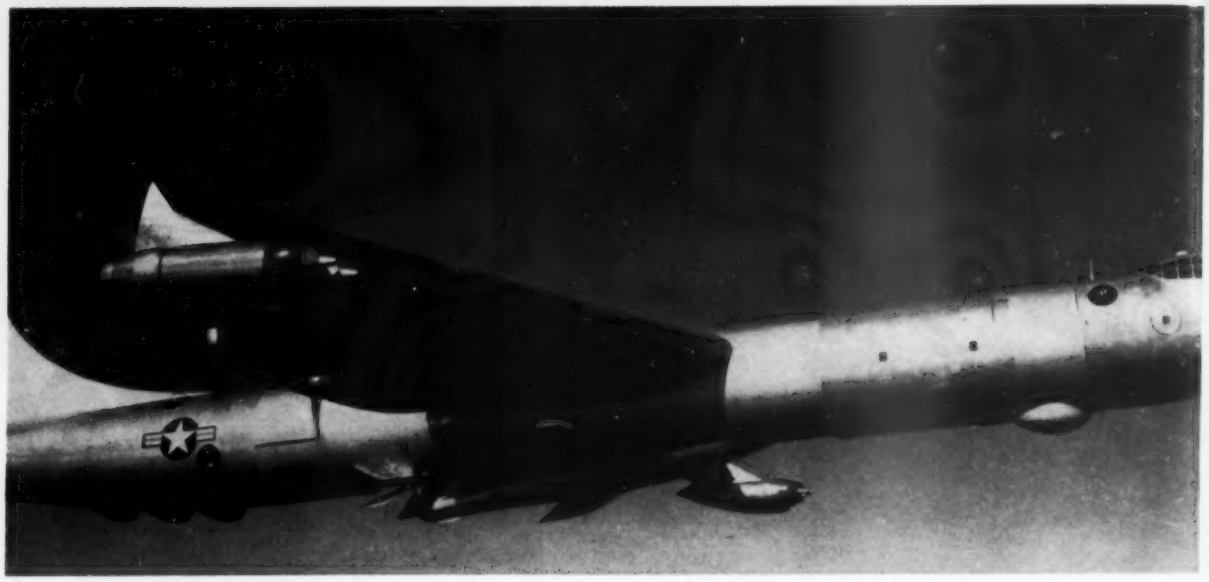
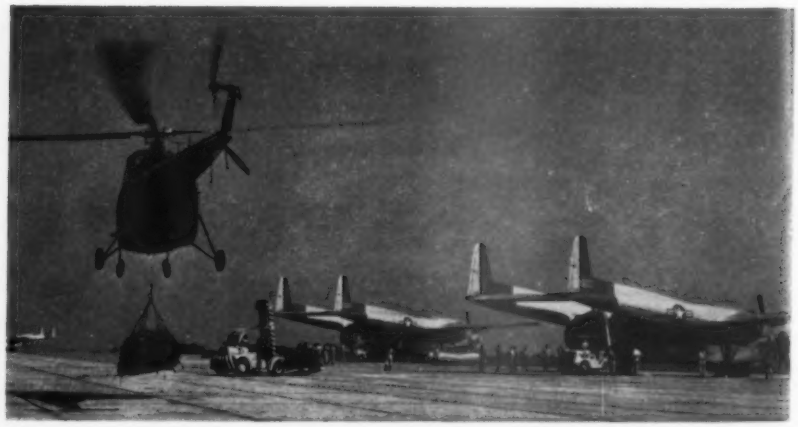


Tucked inside a Convair RB-36 bomb bay, a Republic F-84F is carried toward its destination where it will be lowered beneath the bomber, disengaged, and later retrieved. Operation is known as FICON.

Britain's Boulton Paul P.11A Delta aircraft recently started its flight test program. Powered by a Rolls-Royce Nene, the plane will be used for aerodynamic research at or near the speed of sound.

The Military Scene



Airlifting the hospital, instead of the patients, is demonstrated in photo at right. Field hospital equipment was packed on pallets, lifted across the width of Donaldson AFB, South Carolina, by H-19's, then loaded onto Fairchild C-119's by fork lift trucks. The Flying Boxcars then flew the total of nearly 37,000 pounds to Altus AFB, Oklahoma, roughly 1000 miles away. Move took 10 hours.

heat for the Navy's new sub-hunter

The Bell HSL tandem-rotor helicopter is the latest addition to the Navy's anti-submarine arsenal. This powerful, compact, long range helicopter features folding blades permitting handling on small carriers, cruisers, and other medium size ships. A Janitrol S-100 heater covers all heating requirements for 'copter and crew, just as other Janitrols are serving in most new helicopter installations. A Janitrol representative, called in during the design stages, can solve many aircraft heating problems before they arise.

This is the S-100 (100,000 b.t.u./hr.) combustion heater used in the Bell HSL.

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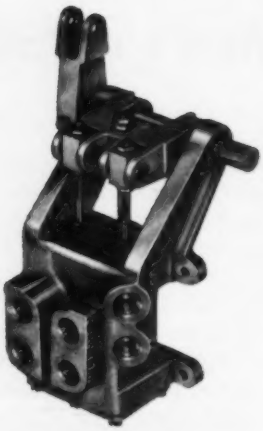
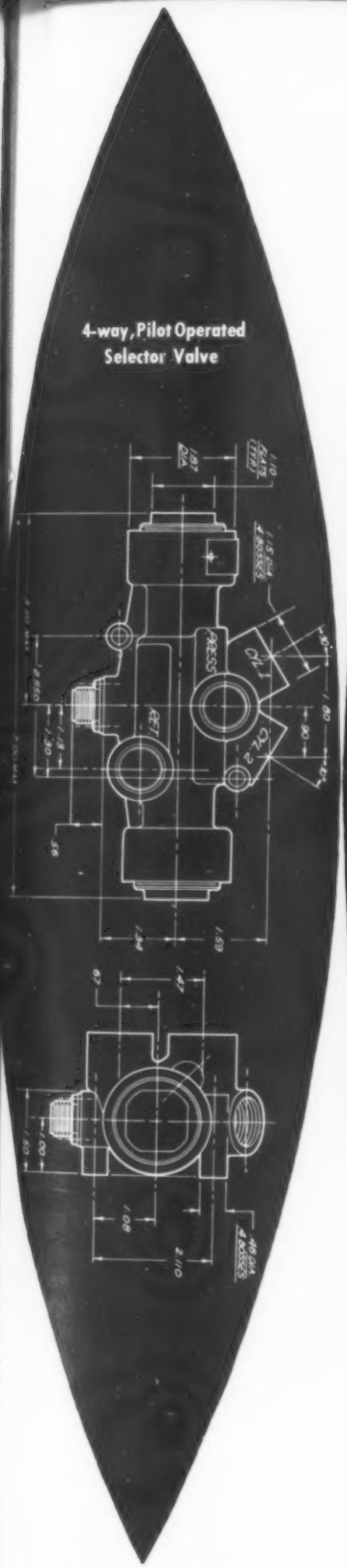


Dual Servo
Control Valve



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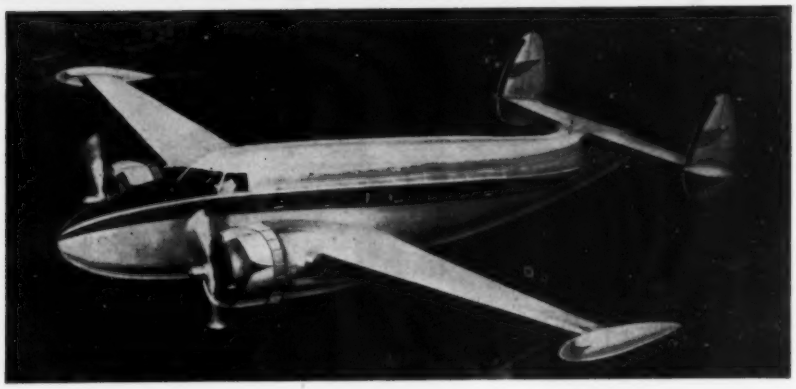
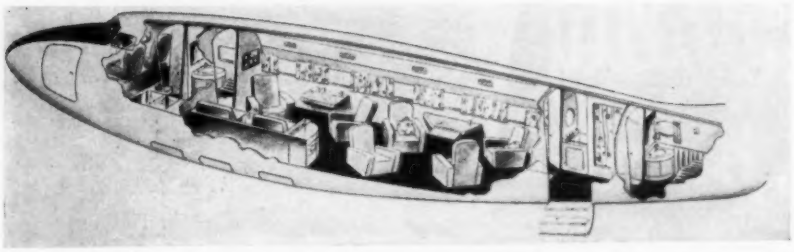
Weston Hydraulics Limited designs and manufactures hydraulic power control cylinders, actuating cylinders, solenoid selector valves, manual selector valves, regulator valves, shut-off valves, brake valves, servo valves, pneumatic control units, and other control equipment for airplanes and guided missiles.

The six illustrations are representative of the types of units manufactured by Weston.

The blueprint represents a new unit soon to be in production. This is a 4-way, pilot operated, SELECTOR VALVE for directional control of hydraulic actuating cylinders. While it *is* a new unit, yet it has already been proved. Fundamentally it is a redesign of the widely used Weston Ball Pilot Selector Valve which has established an outstanding record for dependability. This new design provides equivalent performance in a smaller package and at a weight saving of approximately one-third. It uses no moving seals and so provides maximum adaptability to high temperature operation. Available in a wide variety of flow configurations. Port sizes: ¼", ⅜", ½", ⅝". Write for full information.



'Ideal' Corporate Aircraft . . .



. . . from Modified Lodestar

By Lois C. Philmus

WHILE aircraft manufacturers are conducting market surveys and drafting plans for the "ideal" corporate aircraft, the large modification bases are filling the breach by creating conversions of existing aircraft, coming close to the specifications set forth by corporate owners in recent American Aviation and National Business Aircraft Association (formerly CAOA) surveys.

Latest candidate for the "ideal" tag is Aviation Export Co., Ltd., of Los Angeles, sole sales agent for Aviation Research and Manufacturing Co., whose engineers have come up with a new Lodestar modification, known as the Super Lodestar.

The results:

- **Pressurization;**
- **Normal cruise speed** of 280 mph with maximum cruise at 20,000 ft. of 310 mph;
- **Gross weight** increased to 21,500 lbs.;
- **Normal range** of 2500 miles.

The price tag for the increased performance is $196,500.

In order to install the hydraulic pressurization equipment, which creates an 8000-foot cabin altitude while at 18,000 feet plane altitude, two pressure bulkheads are installed forward and aft. New window and door frames have been designed to support the pressure loads. Boundary for the pressurized area is a sheet metal floor which replaces the former flooring. A Western supercharger, similar to that used on Constellations, is utilized.

While increasing the number of rings and the strength of the fuselage to accommodate the pressurization, requirements for increasing take-off gross were also met. Other exterior changes which are said to increase performance and gross weight include: elimination of the bat wing; modification of tail assembly by eliminating tail tips, and variation in the horizontal stabilizer angle of incidence, which eliminates elevator droop.

Standard 160-gallon fiberglas tanks are installed after reinforcement of the main beam for about 12 feet and replacement of the outer skin panels. The tanks incorporate submerged fuel pumps, fuel level indicators, tip tank lights, and dump valves.

Increased power is supplied by two Curtiss-Wright 1820-56 1350 hp engines and change to square-tip propellers. A new system of cowl and augmentor stacks is said to improve head temperatures and to increase engine efficiency. An electric pump replaces the hand-operated wobble pump for priming the engine.

A fiberglas tail cone is included on the Super Lodestar, adding 18" to 20", thus providing a place to house the antenna.

The cockpit involves the installation of a two-piece windshield. Additional navigation and communication equipment includes dual ADF, 20-channel VHF, command transmitter and receiver, marker beacon, and an autopilot. Interiors can be designed to accommodate from six to 12 passengers, including soundproofing and a new heating system.

Baggage compartments include a 42 cubic foot area which can hold 800 pounds; 82 cubic feet in the nose to hold 1500 pounds; as well as 26 cubic foot and 40 cubic foot areas to hold 400 and 700 pounds, respectively, depending on individual requirements.

The Flying Tiger Line will handle the actual engineering of the modification at its maintenance base at Lockheed Air Terminal. Since it takes 4½ months to complete one modification, it is estimated the FTL will be able to complete about 10 Super Lodestar modifications per year.

Aviation Export has drawn up a proposed manufacturing sequence in order to arrive at near-assembly-line methods for producing the modifications. The preparations call for removing outer wing panels, flaps, and engines and setting the fuselage body in level flight position with wooden scaffolding placed under the entire fuselage length. The sequence then goes as follows:

- **Longitudinal reinforcing members,** i.e., stringers, longerons, etc., are added first;
- **Lateral reinforcing members** are then constructed, cut to accommodate longitudinal members;
- **Modification work proceeds in sections,** in order to simplify operations;
- **Door and window openings** are cut and frames installed;
- **Pressure bulkheads** are manufactured and fuselage skin is sealed at pressure openings;
- **Pressure system** is installed during fabrication and reinforcement of fuselage pressure area;
- **Cockpit area** is dealt with separately, since openings necessary for pilot vision and resulting area reinforcement require the strengethening of boundary members for windshields and side windows.

Aviation Export Co., Ltd., 5478 Wilshire Blvd., Los Angeles 36, Calif., requires a 20% down payment on agreement for the conversion and the balance is paid upon completion and acceptance by the customer. • • •

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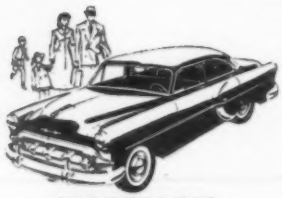

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Air Force Pilots Whacked by Economy Axe

The sad story of the USAF careermen with careers no longer, or, you too may be sub-marginal.

By Cy Caldwell

THE STORY BROKE August 24, the beginning of one of the hottest weeks in Washington's heat-blistered history. The Air Force had sent separation notices to 6503 reserve officers, expected to release 4000 more to make room for the incoming college graduates from the Reserve Officers Training Corps. In addition, 35,000 airmen who in the ordinary course of events would serve another year would be permitted to fold their tents like Arabs and silently steal away.

An Air Force spokesman—he remains nameless because he didn't want his name even remotely connected with the affair—said the officers had been picked for dismissal on the basis of their individual efficiency reports. Apparently these unlucky 6503 were the least efficient—a nasty note for them to ponder. It certainly wouldn't boost their standing in the inactive reserves.

The Air Force was very unhappy about the whole thing, though probably not as unhappy as the unfortunate officers concerned, some of whom may have voted for General Eisenhower with no dire premonition that they were helping to vote themselves out of an Air Force career. The General had promised the citizens economy, and by Jove he was giving it to them. With Air Force appropriations deeply cut, there simply was no money to pay as many as were in, and as many as were coming in—so somebody simply had to not be there.

This reporter saw gobs of gloom in top Pentagon offices that overlook the Potomac. These are the front rooms with the finest view. But nobody was looking; they were thinking unhappy thoughts. The over-stuffed red leather chairs, the soft sofas on which one may lie down and take a nap, the expensive mahogany desks, the deep green soft carpets, and even the svelte, efficient, and mostly good looking secretaries did little to dispel the brooding overcast.

The inter-communication boxes sounded a muted note, and the telephones seemed to ring like tiny, funeral bells. The generals would pick up the phone reluctantly, as though fearing more bad news.

It must have been gayer in the Kremlin, with the comrades telling each other happily that the capitalist warmongers were whittling down their defenses—just as they did under Louis Johnson of the Truman-Acheson axis. They might consider it a sort of token disarmament, thinly disguised as "economy."

However, the picture, as it turned out upon investigation, was not nearly as bad as that doleful figure of 15,002 booted-out officers would indicate. This reporter interviewed a major general in close touch with the situation. His name will not be mentioned, out of kindness, for it won't do him a bit of good to be connected with this story about the Eisenhower economy hatchet men who wander the banks of the muddy Potomac, throwing fear into the hearts of the military and the long-suffering Civil Service employees, who have been called the "800,000 frightened people."

It must be admitted, out of fairness, that throwing people out of jobs may be financially justifiable, for the national debt is one of the wonders of the world, and largely because of the cost of modern defensive weapons and the pay of the people who must operate them. The choice lay between increasing the debt beyond its present ceiling, or decreasing defense spending. Congress chose the latter course. And that is what the Air Force—and the Army and Navy—have to face.

Now, here is the story in detail, as of Wednesday, September 2. That figure of 15,002 should never have been released, for it didn't present the right picture at all. That number of officers simply were not forced out. Thousands were going anyhow, of their own free will. Only, they weren't going quite so abruptly in a mass exodus, like the children of Israel fleeing Egypt and crossing the Red Sea—in this case the Potomac, for those leaving the Pentagon.

As a matter of fact, 4389 officers would take normal releases during this fiscal year. All of them would have been out by July 1, 1954, when the year ends.

Another 1976 were non-volunteers and would gladly get out and go back to their families any time the Air Force would permit them. These chaps emitted glad cries when they heard the news that they no longer had to keep on doing what they didn't much care to do—such as tangling with MiGs in Korea, no tourist's paradise, it is said.

There were 3080 officers whom the Air Force thought they would have to force out—but now won't have to, a point that will be explained later. So here are the statistics in order:

4389 normal releases during year
1976 non-volunteers who wanted out
3080 the Air Force expected to drop
5557 actual force-outs

15,002 Total

So, the bad news diminishes by nearly two thirds. Not 15,002 would have been forced out, but only 5557. And these, be it said reluctantly, were the officers that best could be spared with the least damage to the Air Force as a whole. It was one of those deals when the boys get separated from the men.

On September 2 a notice was sent around from the office of Roger M. Kyes, Deputy Secretary of Defense. It said: "The Air Force need not release officers additional to the total of 6503 separated. After review of Air Force military personnel program, it is the opinion of the Assistant Secretary of Defense Comptroller that sufficient funds are available to support this program." He must have looked in the bottom drawer. But why didn't he look before the Air Force scared the living daylights out of poor young officers with families to support?

So, the story has, if not a happy ending, at least a much less unhappy one. However, there are undertones to this affair that strike a rather discordant note. It it not strange in these times of international tension and bickering that 6503 Air Force officers have to be "separated" because Congress authorized no money to pay them?

These "surplus" officers were of an average age of 33 years. Many of them had three or four thousand hours flying time to their credit. Consider a hypothetical case: Here's a young captain, a combat pilot who fought in World War II, got married after the war, started a business and a family. Then Korea burst into flame. He is recalled to active service. He fights in Korea.

Then there's an armistice, and we think of saving money. So the economy hatchet men vote no money to pay him and the Air Force has to declare him—or someone else in his place—as surplus, something the nation can get along without. The thing is fantastic.

There is no word from the Kremlin that they have any surplus pilots. They do have a few surplus political figures

around Moscow who are due to be separated. But no surplus pilots. The difference seems to be that the Russians liquidate their politicians, while we liquidate our pilots and other non-rated officers in the Air Force. It seems that we could profitably learn something from these mad Russians.

But to get back to the explaining general and the listening reporter, sitting in the general's slick red leather surroundings in an air conditioned office overlooking the Potomac.

The general had the situation at his finger tips, all neatly reduced to figures. He reeled them off with the ease of a tape recording machine and never hesitated once. An occasional question got an immediate answer, with details.

However, he avoided answering any questions of a political nature—that was out of his department. It was impossible to back him into a corner over the merits of a nice little 123-wing air force over a much nicer 143-wing air force. The reporter—who has interviewed innumerable generals in his largely misspent life—thought, here's one of the very sharpest of them, and none of them are dumb, as the public sometimes thinks. The fact is that generals become generals because they are men of character and ability who usually have a high degree of intelligence, for which they seldom get credit.

Speaking of the 6503 officers recently separated, the general said that a study of their efficiency reports by special selection boards disclosed that 3970 of them were just "so-so" officers with nothing outstanding in their records, but nothing derogatory, either; while 2623 were classified as "sub-marginal"—the military has a jargon of its own, invented to baffle reporters and confuse the Communists.

The Air Force, the general said frankly, didn't really mind losing those sub-marginals, although it would have kept a majority of them so long as the bodies stayed warm. After all, he said, every organization, military or civilian, has five or six per cent of its personnel who are not up to par for one reason or another. But they are of use, even though sub-marginal.

While the general answered innumerable phone calls briefly and efficiently, making many decisions right off the bat, and then taking up the conversation exactly where he had left off, the reporter was thinking: These poor sub-marginal officers probably have sub-marginal wives and sub-marginal children who may not be eating so well from now on. For the military life doesn't tend to fit a man for the more competitive civilian life.

The Air Force, to sum up, has sadly but dutifully carried out the personnel "economy" program with one point foremost: the air defense of the nation. If people must be dropped, drop the less efficient ones. That's only fair.

Yet the unfortunate fact remains that this policy of selection leaves the officer bearing an implied slur upon his reputation. He was let out as surplus because he could be spared, while others were kept in because they were more valuable. That is pretty shabby treatment of an officer who probably did his best, and who had no bad marks against his record. He is simply a victim of political skull-duggery.

The general's office looks out to where two highway bridges and a railway bridge span the Potomac. At that point in the river, back in 1865, the Long Bridge stood. Across its splinter-covered planks marched the boys in blue to fight the first battles of Bull Run and Manassas. They had marched across that historic old bridge with high hopes in their hearts, with the shine of glory in their eyes. They also had fear in their hearts, for they were going to war, and they knew that not all come back.

They must have been, the reporter was thinking, much like those other boys in Air Force blue about whom the general had been speaking. Those boys of 1865 had been driven back, a defeated army. They swarmed across the bridge, back to Washington. Some of those walking were wounded; others were tossing and moaning in pain in the jolting horsedrawn ambulances. Others did not come back. Eventually they were brought to rest in Arlington National Cemetery, which lies near the Pentagon.

And here were the reporter and the general sitting together in the Pentagon, whose vast bulk is spread over ground that had been marshes when those boys in blue had marched past to save a nation. The building, the reporter thought, is a huge symbol in enduring concrete that declares to the world that those American boys of nearly a century ago had not fought and died in vain.

Right here in the Pentagon are kept the records to prove that the United States has become a mighty nation, strong in the possession of weapons with which to defend itself, and of men skilled in their use and with the courage to use them. Here, too, are the brains that direct those forces of land, sea, and air: to wage war if need be, to maintain peace if possible.

What the general and he really had been discussing, the reporter thought, was the well-being of the nation they loved and which both served in their so different ways. They had been talking about how to keep their nation strong, rather than to weaken it. Yes, that was the point, though neither had mentioned it directly. The dropping of those officers was, in itself, relatively unimportant. They would find other work, and their lives would go on.

But the Air Force—and to a lesser extent the Army and the Navy—have been cut back, have been slowed down in their development, have actually been weakened materially at a critical time in world history, when a majority of our people believe those forces should be strengthened. That is the point at issue—a point of vital importance.

• • •

Republic-International May Buy Parts in U. S.

Republic Aviation Corp.-International of Lugano, Switzerland, may purchase some F-84F parts from U. S. aircraft firms. While $30 million of its $50 million contract with the United States Air Forces in Europe for F-84F parts has been subcontracted to SNCASE of Paris, $20 million is as yet unobligated.

Under terms of the agreement with USAFE, some parts may be purchased in the U. S., at least until European sources can be found, according to Robert W. Kinkead, Republic vice president, who stated that no definite decision has been reached on what other European aviation firms will get subcontracts.

Kinkaid reported that the contract with SNCASE includes the cost of tooling F-84F components, but Republic still expects to get a good supply of components from the French firm. He further stated that there was a good possibility that SNCASE would eventually receive a contract for complete production of the Thunderstreak, provided that USAFE contracts with Republic-International for the entire plane are forthcoming.

The Lugano firm has received permission from the Air Force to try to sign maintenance contracts with NATO nations operating F-84 Thunderjets. Although all MDAP nations receiving F-84's are responsible for their own maintenance, few have either the facilities or know-how for maintenance and repair work, according to Republic officials. Before lining up contracts from NATO, Republic-International's program calls for setting up F-84 repair depots in three or four European cities.

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The 24-hour reel of tape, only seven inches in diameter, makes a complete, economical, permanent automatically timed record of a full day's communications . . . or is easily erased for repeated re-use. Longer recording periods, almost unlimited in time, can be attained through simple modifications.

SoundScriber's unique mechanical design operates at approximately 1/60 the speed of conventional tape recorders —assures longer life and minimum service attention.

Contained in a sturdy aluminum carrying case, the SoundScriber 24-Hour Recorder operates from standard electrical outlets. The chassis is easily removed for mounting in conventional 19" rack.

The 24-Hour Recorder meets JAN specifications. It is now available for immediate delivery to commercial and other users.

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No fighter-interceptor can get into the air quicker, and none can climb faster than the Lockheed F-94C Starfire. This new all-weather interceptor for the U.S. Air Force is now defending key American cities from possible air attack. The Starfire was designed to reach target altitude in record time.

Combining greater flight availability and lower maintenance costs with superlative performance, the F-94C Starfire actually delivers more defense for your dollar.

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Lockheed

Builds Plane No. 25,000 and Jet No. 5,000

Lockheed airplane Number 25,000 rolled off the production lines recently in Lockheed's Burbank, California, plant. Significantly, it was an F-94C Starfire Jet Interceptor, newest member of Lockheed's pioneering jet aircraft family. Later, another Lockheed Starfire became the 5,000th Lockheed jet to be built.

There's a reason for the quantity production of F-94C Starfires. Here's a military jet that does an outstanding job and saves money, too.

Here's How It Does It

Economy is important with the Air Force, and here's how the Starfire helps on the budget:

An economical airplane is one that performs its mission with greatest efficiency and offers maximum availability on the ready line. Maximum time between servicings means *lower maintenance costs*. More important, it means *fewer planes are needed*. The U.S.A.F. provides both types of economy with the Starfire.

2-Man Team Helps

Since the Lockheed Starfire is a 2-place interceptor, it utilizes the cooperative efficiency of a 2-man team to compute the tactical problem and perform all other split-second operations of intercepting an enemy at 600-mph-plus speeds.

This all-weather interceptor is equipped with automatic electronic controls — Hughes Radar System, Westinghouse Automatic Pilot, Sperry Zero Reader—and other advanced devices, making it very nearly an automatic airplane.

A "Pilot's Airplane"

Reports coming in from the field indicate that Lockheed has again produced a "pilot's airplane." Air Force pilots like the Starfire and like to fly it. They find it simple to fly and rock-steady under actual instrument conditions.

Here is the happy combination of 4 important factors in one reliable airplane: (1) Superlative performance — (2) Easy maintenance — (3) Pilot popularity — (4) More defense for your dollar.

West Coast Talk

By Fred S. Hunter

HERE'S an expensive thought. Bright young man we know thinks it would be a terrific idea if one airline would elect to cruise its Douglas DC-7's at rated power on hot-shot schedules. Result would be a cruising speed of about 410 mph. Other results would be a considerable penalty in fuel flow and engine overhaul costs a third to half again as much. Wright Aeronautical also could be depended upon to holler whoa! on its engine warranties. "So it's expensive!" says our b.y.m. "Look at the advertising! Look at the prestige! At 400 mph against the other guy's 300 mph, you'd get all the business! It would be a breeze!"

•

Western Air Lines pilots have suggested flight paths at night might be better defined if the present flashing navigation lights were made to remain constant after the new Grimes identification lights are installed on WAL's DC-6B's. The Grimes lights are big, bright flashers. Engineering Manager Harrison Holzapfel is exploring the idea, which looks like it might have merit. The change would require CAA approval.

•

One of the better kept secrets of the Korean war was the use of the North American RB-45 by the Far East Air Forces. The Air Force waited more than a year, until it announced the 1952 Mackay Trophy award to Maj. Louis H. Carrington, before disclosing the first nonstop jet flight across the Pacific had been with an RB-45. But there never has been a hint of the missions the RB-45's were called upon to perform, although it was generally known that three of the fast four-jet bombers were in the Korea area during a large share of the war. Speculation about them has included some interesting guesses.

•

Jet transport jottings—I. L. Shogran, for 20 years chief of the power plant group at the Douglas Santa Monica plant, is chief project engineer on the Douglas DC-8. . . . Lockheed's Kelly Johnson says the cabin pressure system for a jet transport will have to be made as safe as the wing spar. . . . Some airline people would like Boeing's 707 to be a little bigger weight-wise.

•

Clarence Belinn, president of Los Angeles Airways, doesn't want to have to buy any more new equipment until Sikorsky's S-58 becomes available. On the other hand, mail volumes take up so much of the capacity of the three S-55's and three S-51's he is now operating, it is difficult to plan for the passenger service he wants to start next year. He'll have to limit it to a few key points if he sticks to his resolution to wait for the new Sikorsky job.

•

Lockheed lost out on 10 C-121C transports for the Air Force, but shed no tears because it meant an even larger order for early-warning-type Turbo-Compound Super Constellations. The previously ordered C-121C's were switched to RC-121C's by the Air Force to obtain earlier delivery on the radar picket planes. After the first 10, the radar craft will be designated RC-121D's.

•

WEST COAST MISCELLANY

E. W. Robischon, manager of the western region for the Institute of the Aeronautical Sciences, who recently returned to his desk after four months with NATO in Paris, is debating whether to go back for another tour this fall. . . . **Dan Kimball,** former secretary of the Navy, since returning to **General Tire & Rubber** and **Aerojet-General,** spends most of his time in Cincinnati, but occasionally gets out to his old stamping ground at Azusa. . . . **Hughes Aircraft** is in production on nose installations of its fire control system for the **A. V. Roe, Canada, CF-100.** . . . **Summers Gyroscope Co.** has built a block house featuring 2 x 6 inch timbers, 8 x 16 inch concrete blocks and 1 and ¾ inch laminated bulletproof glass for shake-down runs of extra high-speed gyro rotors.

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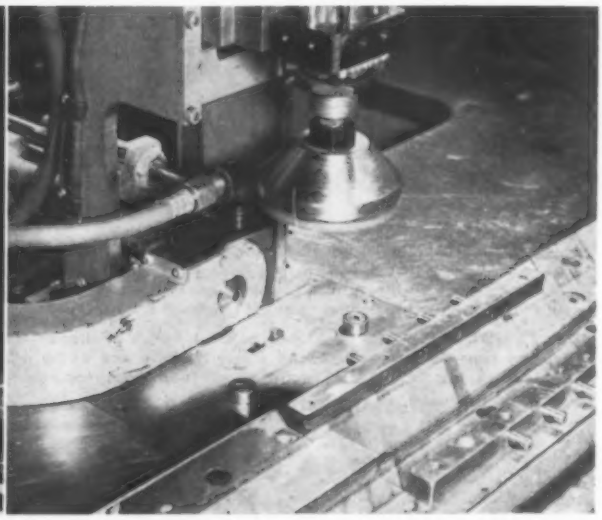
Heavy press plant in miniature is used by Aluminum Company of America while planning layout for its Cleveland, Ohio, plant, which will contain two of the world's largest metal-working presses, with capacities of 35,000 and 50,000 tons. Model is built to a scale of one quarter inch equals one foot, as indicated by grid lines on floor; other lines on floor represent underground structures. Construction of the model, at cost of $6500, enabled shop personnel to contribute to planning of plant layout.

Production Lines

Weighing the results of General Electric's jet engine production is one of the last steps before the J-47-17's are turned over to the Air Force. Actual weight has been blanked out of picture at left for security reasons. Operation is conducted at G.E.'s jet plant near Cincinnati, Ohio.



Index drilling machine at Boeing speeds drilling of pilot holes in B-47 ribs. Index pins beneath the part position the rib for drilling; cone-shaped pressure "foot" holds part in place during operation. At right, above, the underside of the indexing tool. Two triggers engage the pins on the tool. Device was developed by tool designer Everett Jones.

Maintenance Bulletin Board

Small-size tanker shown here refueling Pan American World Airways' Onan auxiliary power unit has been adopted by PAA Pacific-Alaska division at San Francisco to reduce ramp congestion and improve safety in transporting flammable fluids between overhaul shops Unit was originally designed for gassing small airplanes and is produced by Metal Fabricators of Berkeley, Calif.

NWA Rebraids Own Ignition Harnesses

An ignition harness rebraiding machine costing slightly more than $1000, but which is expected to pay for itself in a month's time and produce an annual savings of about $10,000, has been purchased by Northwest Orient Airlines. The unit installs the nylon covering on low-tension ignition harnesses used in NWA's Pratt & Whitney R-4360 engines of Boeing 377 aircraft, and is produced by the New England Butt Co. of Providence, R.I.

Northwest believes it is the first airline to overhaul and rebraid its own ignition harnesses. The more common practice in industry is to return the harnesses to the manufacturer for factory overhaul and rebraiding, a procedure which cost NWA $75 per unit and about $15,000 a year.

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AMERICAN IS PROUD of its reputation for fine food service. When the time came to outfit its new Flagship fleet, American turned to REF, pioneers in the field of quality galleys. The result is the new SKYGALLEY, which will fly DC-7 Flagships coast to coast in about 8 hours.

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MAINTENANCE BRIEFS

Suggestion to install a small block on the drive gear of Geneva Loc actuators to prevent armature and field burnout due to over-travel brought an award of more than $400 to B. H. Wright, American Airlines' accessory overhaul shop mechanic. Savings resulting from the idea are expected to amount to several thousand dollars annually.

• •

American Airlines is testing two Jack & Heintz model H60-103 tachometer generators for a full engine change period on a Douglas DC-6.

A Salute

TO THE LOW-FLYING MEN!

All hail to the ace in the "wild blue yonder" . . . but let's give with some man-sized cheers for the lads who slug it out at hill-top level. From the time they take off . . . till the mission is completed, these strategic fighter bombers and tactical close support pilots face a brutal blasting all along the way.

➤ ➤ ➤ Sniped at by small arms and machine guns . . . bracketed by flak with the constant hazard of limping home harassed by enemy aircraft . . . these are the stout warriors for whom we've planned Republic's rugged THUNDER-craft . . . to get them there . . . do the job, and bring them back.

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Extra Section

By Lois C. Philmus

THERE ARE TWO PHRASES in the non-carrier aviation industry that should be stricken from the records: "general aviation" and "fixed-base operators." The first has been a very convenient way of identifying all the miscellaneous bits of the industry that did not fall into the categories of airlines or military. These miscellaneous bits, however, have slowly and unobtrusively shaped into sound and growing industries in their own rights. Executive flying, air taxi service, and agricultural aviation about three years ago did not have the magnitude for individual identification—they were lumped into the "general aviation" or "lightplane group" or "private flying" categories and pushed to the bottom of government and manufacturers' priority lists. But suddenly these groups have gained the stature of "potential markets." Corporation flying accounts for about 7500 of the civil planes flying; air taxi operators, at one time "one-plane" operations, are acquiring new equipment and going on schedules; agricultural aviation is building its own specialists, some specializing in dusting and spraying, while others specialize in seeding, and so on. Incomes are rising, the groups are getting larger and definitely more organized, and the manufacturers are designing and building special equipment to meet their needs. So let's do away with "general aviation" and call an industry an industry.

• •

Then, let's give the fixed-base operators due respect. The FBO is identified in the minds of some with the days of the small airport where a man who knew how to fly sold a little gas and oil, taught a few others how to fly, flew a few sightseeing charters for five bucks a throw, and just about made ends meet doing a little bit of everything. Because of the advent of the new industries, today's successful operator would better be identified as the service station of the air—for those who are in the gas, oil, and repair business; the modification centers, specializing in rebuilding aircraft and bringing them up to today's specifications; the distributors, who are doing a multi-million dollar business in the sale of aircraft and equipment. The air taxi operators also are tagged as "fixed-base operators." So here is another example of four distinct industries still being lumped under one tag.

• •

Whatever happened to the great plans for standardizing and simplifying lightplane cockpits? There were hundreds of studies and surveys made on the advisability of such a move—in order to make it easier for the private pilot ticket holder to fly. There doesn't seem to be any start in that direction at all. If you fly a Beech Bonanza, you need a checkout in a Piper Pacer or one of the Cessna models. As for simplification, it seems that all plans were just chucked right out the cockpit window. The instrument panels are looking more and more like those aboard airliners and the novice pilot doesn't have a chance. Instead of taking stuff out, there seems to be a contest on to see how much more navigational and radio equipment can be jammed in. In order to attract the money-laden executive group, the manufacturers seem to be competing with each other to build miniature airliners, thus scaring away potential purchasers who just can't pay the much higher price tag for the complex end-product.

• •

Despite the corporation aircraft group consensus that a twin-engine, eight-place, high-speed, pressurized plane is the "ideal," manufacturers seem to be afraid to start because of the uncertainty of the potential market. The race seems to be on, instead, to see which one can build the cheapest and best twin of the small, four-place variety. Piper Apache is on the way, Twin Cessna will be here early in 1954, and reportedly North American, Ryan, and Republic are playing around with designs in this field.

• •

SIGN OF THE TIMES? You can now get a low or favorite "N" number for your plane by putting $10 on the line at CAA, just as in auto licensing.

Better airplane performance with reduced engine noise and vibration is claimed for V-belt propeller drive shown installed on Cessna 170. A joint development of Cessna Aircraft Co. and Goodyear Tire and Rubber Co., design uses eight V-belts between multi-groove drive and propeller pulleys. Simple adjustment mechanism allows movement of propeller pulley position to maintain proper belt tension.

Low Temperature Grease

A new low-temperature grease for aircraft accessory lubrication under extreme conditions of long-range stratospheric flight has been developed by The Texas Company. Called Texaco Low-Temp 1888, the grease is suited to a wide variety of applications and operates in the range of minus 100° and plus 250° Fahrenheit.

Test Pilot Crump, a wooden dummy, stands by for action as Chance Vought prepares to test seat ejection mechanism in the cockpit of a simulated F7U-3 Cutlass. Crump ends each brief flight by falling into a pool of water, from which he is retrieved to do it all over again.

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Vickers
Model AA-40510
Pump Control Valve.
(18 gpm)

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- ☆ SIMPLIFIES HYDRAULIC SYSTEM
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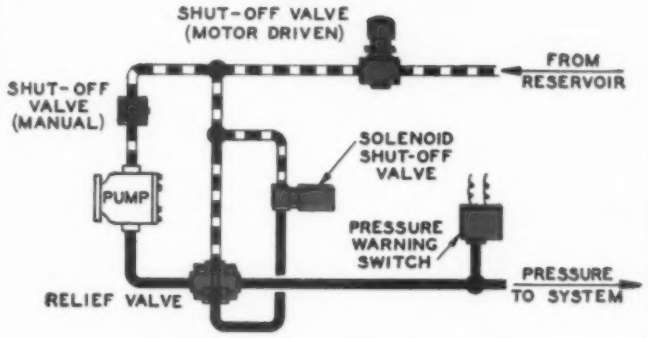

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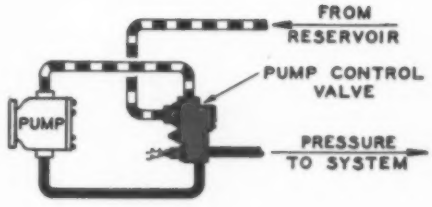

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This special 5-in-1 valve was developed for use where it is desirable to individually control each of several pumps. It will automatically unload the pump delivery at a low pressure into the suction side when the oil temperature has reached a predetermined maximum. The design includes manual unloading of the pump. Maximum system pressure is limited by a built-in relief valve. A pressure-actuated electric switch is provided for use in a signal system to flag system pressure changes. The manual pump shut-off control also serves as a firewall shut-off device.

As used on one four-engine airplane, this accessory reduced the number of separate hydraulic units from 14 to 4 and eliminated four electrical switches. It utilizes many standard internal parts. Replacement of multiple accessories by the single valve reduced procurement costs by about 66%; this does not include savings due to the simplified piping. The weight saving was also significant. For further information, write for new Bulletin A5230.

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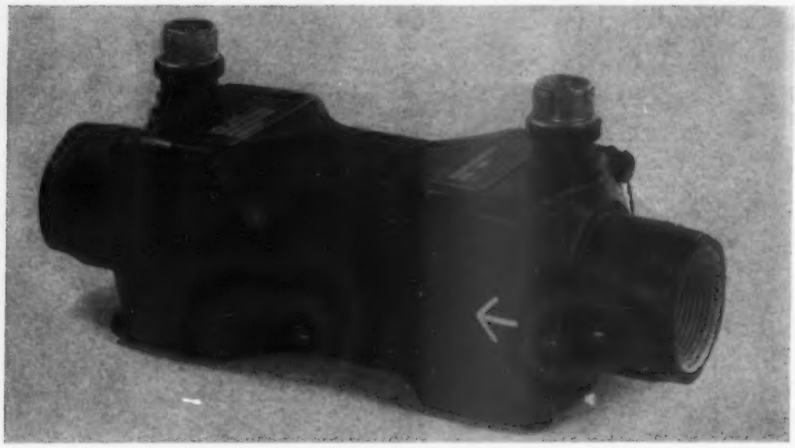
Used in computers and fire control systems, the type 1418 potentiometer is available with resistance values between 100 and 350,000 ohms. Unit dimensions are 1.437" diameter by 1.03" long.

Address: Electro-Mec Laboratory, 19 Murray St., New York 7, N. Y.

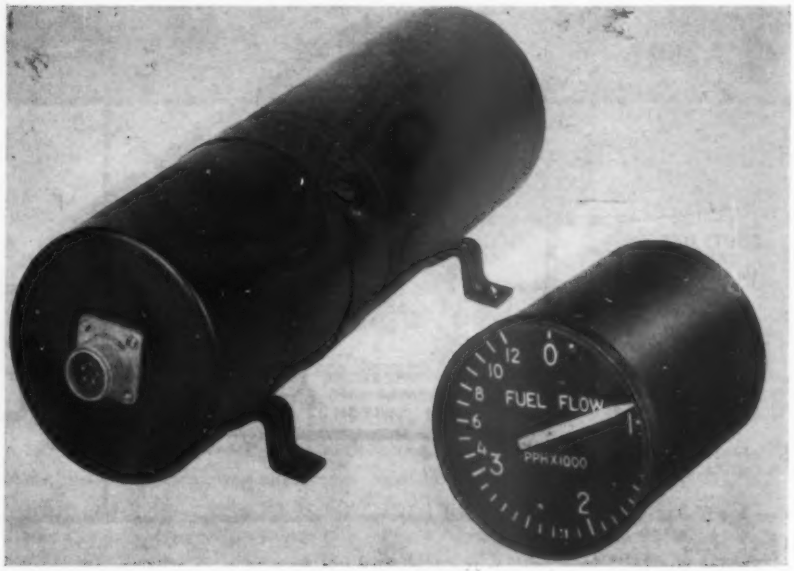
Fire Wagon

A new jeep-mounted chemical fire truck arrangement, which uses a 300-pound tank of specially treated sodium bicarbonate as a dry chemical extinguishing agent, has been introduced by Ansul Chemical Co. The agent, common baking soda, is treated to assure freedom of flow and resistance to moisture and, upon contact with flame, is said to produce 1100 times its own volume in fire-smothering gases, with quicker extinguishing characteristics than other agents. Jeep-mounting of the apparatus eliminates the need for special station facilities making it an efficient piece of airport fire fighting equipment.

Address: Ansul Chemical Co., Marinette, Wis.



TRANSMITTER UNIT for flowmeter is shown above. Below, the power supply unit and the indicator.



Mass Fuel Flowmeter System Developed

The General Electric Co. has entered its bid in the highly active jet engine fuel flowmeter market with an 11-pound electro-mechanical type mass fuel flowmeter system designed to give the pilot of a jet airplane a direct and accurate reading of engine fuel consumption in the all-important terms of pounds consumed per hour.

In its present design the new G-E system will handle up to 12,000 pph flow and withstand fuel pressures up to 300 psi while operating at a system pressure of 50 psi. Newer designs now being tested by the company to accommodate larger jet engines will increase this capacity to 40,000 pph and raise pressures as high as 1600 psi.

General Electric's system is made up of a constant-frequency power supply, a transmitter, and an expanded-scale cockpit indicator. For system installations in multi-engine airplanes, a single power supply will operate up to eight separate transmitters and indicators.

Heart of the new system is the transmitter, which consists of two cylinders, one called an impeller and the other a turbine, placed end to end within the transmitter housing so that their axes coin-

WESTERN AIR LINES

America's Oldest Airline chooses **CHAMPIONS!**

Western Air Lines—America's oldest commercial airline—has taken delivery on its new fleet of CHAMPION-EQUIPPED DC-6Bs. These are now in service on the Pacific coast and on its new direct route between Minnesota and California. Why were Champion Spark Plugs specified?

Let Mr. A. B. Favero, Western's Supt. of Service and Overhaul, tell you:

"After service-testing spark plugs made by a number of manufacturers, Western Air Lines selected Champions for exclusive use on the basis of dependability, life of service, ease of maintenance and cost. Western has now used Champion Spark Plugs exclusively in its entire fleet for the past several years. In light of the excellent service we have experienced, Champion plugs were chosen for use in Western's new fleet of Douglas DC-6Bs."

Among the world's major airlines, as well as in corporate and private flight, the big preference is Champion.

Such popularity must be earned. And Champion, the largest manufacturer of aviation spark plugs, earns it through advanced aviation-ignition research and engineering coupled with precision manufacturing techniques.

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

The RC26S and R37S-1 are the most widely used of Champion's many types of aircraft spark plugs.

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"Competitive Cooperation"

That, we think, is a pretty fair description of interline freight hauling.

Over the past year the Tigers have been divvying up between 300,000 and 400,000 lbs. of profitable freight business each month among some 40 air, land and sea carriers on a reciprocal basis.

And we haven't begun to scrape the bottom of the hold.

There's a Tiger representative in nearly every important U. S. city and he likes nothing better than a little competitive cooperation.

He's as near as your own rep's phone. No time like the present for them to get acquainted.

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cide. Around the periphery of the upstream cylinder (impeller) which is rotated by a motor-driven constant-speed drive, a number of equally spaced holes are provided.

In operation, fuel passing through the transmitter enters the holes in the rotating impeller and is given a velocity at a right angle to the normal direction of flow. As this angular momentum is removed from the fuel by the second cylinder or turbine, the torque created deflects the turbine against restraining springs. This angular deflection is then transmitted to the indicator where the mass rate of flow is reflected in thousands of pounds per hour. Electrical transmission of the turbine deflection is accomplished by means of a transmitter pickup which consists of a hermetically sealed annular magnetic core and associated wiring which is acted upon by a two-pole permanent magnet rotor attached to the turbine shaft.

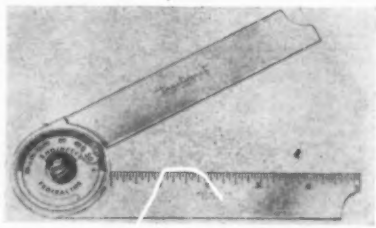
The system features:

• **Light-weight construction**—The indicator weighs 0.6 pounds, the transmitter 5.5 pounds, and the power supply five pounds.

• **Low transmitter pressure drop**—A maximum of 0.15 psi drop is specified at 6000 pph mass flow, and 0.3 psi at 9000 pph.

Power requirements for both the indicator and transmitter are 115 volt a-c, single-phase, 400-cycle current. Supply voltage for the power supply is 28 volts, d-c, and output power to drive the impeller motor at a constant speed is 15 volts, three-phase four-cycle alternating current.

Address: **General Electric Co.**, Schenectady 5, N. Y.



Protractor

Engineer's miniature drafting machine, called the Tractograf is now being marketed by the Way-Mac Manufacturing Co. at a list price of $1.98. Essentially a plastic, adjustable protractor, the Tractograf permits drawing of angles from 0 to 180° simply by swinging a rule arm to the desired angle, setting and locking an adjustment knob.

Address: **Way-Mac Mfg. Co.**, 8112 Melrose Ave., Los Angeles 46, Calif.

Painting Aid

A rotating indexing machine for production painting of small parts such as rocket heads has been introduced by the Conforming Matrix Corp. Either air-operated or driven by an electric motor Geneva drive, the new unit can be regulated to paint from 400 to 1200 pieces per hour, two at a time.

Address: **Conforming Matrix Corp.**, 405 Factories Bldg., Toledo 2, Ohio.

Technical Literature

JET ENGINE PARTS: Details of machines designed for producing jet engine parts are incorporated in a new bulletin prepared by the Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich.

WIRE STITCHING: Four-page bulletin describes how a wire stitching machine puts an arc in a cross-section of flat wire and clinches stitch at high speed in a process developed by Acme Steel Co., 2840 Archer Ave., Chicago 8, Ill.

BUTTWELDING: Semi-automatic buttwelding machines, manufactured by Solar Aircraft Co., 2200 Pacific Highway, San Diego 12, Calif., are described in a new brochure.

VIBRATION ISOLATORS: Bulletin 534 provides technical data on vibration isolators of the knitted-wire type. Barry Corp., Watertown 72, Mass.

GASOLINE PUMPS: Johnston Pump Co., 3272 E. Foothill Blvd., Pasadena 19, Calif., has made a bulletin available on its gasoline dispensing pumps for terminals and aircraft refueling points.

EXECUTIVE AIRCRAFT: "Conversion No. 92" describes a DC-3 modification to executive aircraft designed for the S. W. Richardson Co. by Executive Aircraft Service, Inc., POB 7307, Dallas, Tex.

PROFILING MACHINE: Di-Profiler applications of grinding, filing, scraping, honing, lapping, and polishing are described by the Engis Equipment Co., 431 S. Dearborn St., Chicago 5, Ill., in a new technical folder.

PORTABLE AIR HEATERS: "Guide to the Selection and Use of Portable Space Heaters" is a booklet which describes different types available for industrial and storage areas, published by American Air Filter Co., Inc., 1824 Third Ave., Moline, Ill.

JET FUELS: Comprehensive discussion on "Fuel for Jet Transports," an article in *Esso Air World*, has been reprinted by Esso Export Corp., Aviation Dept., 45 Rockefeller Pl., New York 20, N. Y.

INSTRUMENT BEARINGS: New Departure Div. of General Motors Corp., Bristol, Conn., has issued a descriptive catalog on small, precision instrument ball bearings.

GAGING CARTRIDGES: A 24-page booklet illustrating a variety of applications of Plunjet gaging cartridges has been published by the Sheffield Corp., Dayton 1, O.

FASTENINGS: The H. M. Harper Co. of Morton Grove, Ill., has prepared a special manual on high temperature alloys. Tables and engineering data.

ELECTRONIC TUBES: Amperex Electronic Corp. of 230 Duffy Ave., Hicksville, L. I., N. Y., has brought up to date its catalog on electronic tubes.

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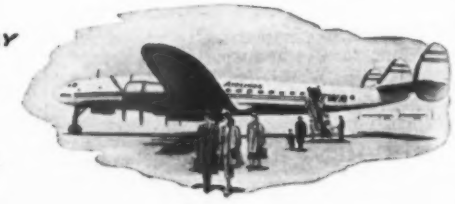

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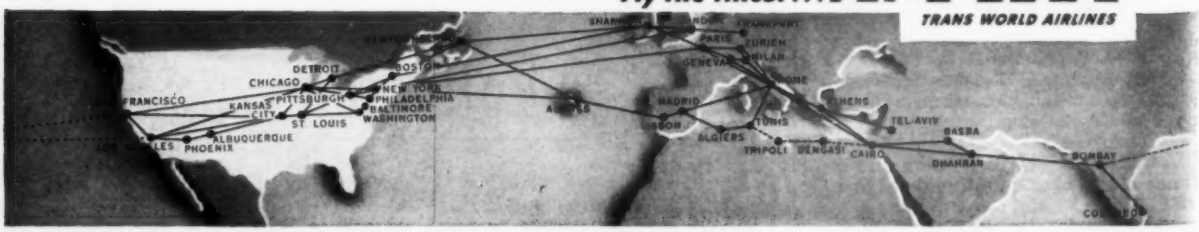

Airline Commentary

By Eric Bramley

AIRLINES flying domestic coach trips have agreed that passengers who no-show or who fail to cancel within three hours before departure will get only 80% of their money back, with a $5 minimum charge. There are also certain time limits on picking up tickets. Plans hadn't become effective at this writing, because CAB must first approve it.

At present, penalties on coach flights differ between airlines, and the new plan would be an improvement in that respect. However, a number of things weaken it, in our opinion. Sample: you can cancel by phone and present your ticket later for refund: If you scream loud and long enough that an agent erred in recording your time of cancellation, it's a good bet that you can get a full refund. There are also other loopholes. However, if the industry's convinced that a uniform penalty system is needed, at least a start has been made.

•

A book could be written entitled "Things Airline Lawyers Wish They'd Never Said." Ask the old-timers how many times their opponents have dragged out statements from years past to haunt them in new hearings. Just recently it's very possible that **Hardy Maclay,** attorney for the North American Airlines group, wishes he could expunge the record of the U. S. District Court, Southern District of California, where he was pressing a case against the CAB.

Here's part of the transcript:

Mr. Highsaw (CAB attorney): "The plaintiffs also have an experienced lawyer and ex-United States Senator who is counsel in this case. So far as I know he is in Washington now."

Mr. Maclay: "Who is that?"

Mr. Highsaw: "Ex-Senator O'Mahoney."

Mr. Maclay: "Ex-Senator O'Mahoney, I don't think he has practiced enough law recently to be competent to handle that part of this work."

It happens that the ex-Senator from Wyoming is the general counsel for the North American non-sked group, which Maclay is representing in the hearing!

•

Our note that E. W. Wiggins Airways issued a "last day" air mail cover when the local service line went out of business following non-renewal of its certificate brings a response from Vern Gunn, TWA's central region sales promotion manager. This wasn't the first such cover, he says, explaining that in 1935 when Eastern Air Lines was the last carrier to discontinue mail-only planes, it issued a cover titled "The Passing of the Pony Express of the Air." This marked the end of an era rather than the end of an airline, says Vern, who has a cover autographed by the pilot of the last flight.

•

MISCELLANY

Kaiser-Frazer is pointing out that customers can fly air coach to Detroit, **drive their new cars home** and save money on freight charges. To the west coast, these charges are $247; coach fare is $86 plus tax. . . . Cordova Airlines is **first Alaskan carrier to start the family plan.** It's good from midnight Thursday to midnight Monday, designed to encourage family travel over weekends, when business travel is light. . . . Capital Airlines, which is using ticket machines at several stations, is experimenting with **new ticketing method** that may double the machines' capacity. . . . Two TWA pilots have retired—**Amos Collins,** who joined Maddux, a predecessor company, in 1929 and who had a total of 24,300 hours, and **John Welsh,** who started with Western Air Express in 1929.

Delta-C&S Rises to Sixth Among Trunks

The relative standing of domestic trunk airlines in terms of revenue passengers carried and in terms of revenue passenger-miles has shown some marked changes over the past seven years. Among the Big Four, Eastern Air Lines produced the major shift by moving into second place in 1948 and has retained that position ever since.

As might be expected, the two big mergers of the past year have also made some changes. Delta Air Lines and Chicago & Southern were eighth and eleventh, respectively, in terms of passengers carried, but the merged company now rates sixth, having nudged out Northwest and Braniff. In terms of revenue passenger-miles the new company is now fifth. The Braniff/Mid-Continent merger, however, failed to move the combined company as high in the ranks as might have been expected.

Following are two tables showing the standings at the end of the first six months for the years 1946, 1950, and 1953:

	Revenue Passengers		
	1946	1950	1953
American	1	1	1
United	2	3	3
Eastern	3	2	2
Capital	4	5	5
TWA	5	4	4
Northwest	6	6	8
Braniff	7	8	7*
Delta	8	7	6**
Western	9	9	10
Northeast	10	13	11
C&S	11	12	..
National	12	10	9
MCA	13	11	..
Continental	14	14	12
Colonial	15	15	13

	Revenue Passenger-Miles		
	1946	1950	1953
American	1	1	1
United	2	3	3
TWA	3	4	4
Eastern	4	2	2
Capital	5	6	6
Northwest	6	5	7
Braniff	7	10	9*
Delta	8	7	5**
Western	9	9	10
National	10	8	8
C&S	11	11	..
MCA	12	12	..
Continental	13	13	11
Northeast	14	14	13
Colonial	15	15	12

** Includes MCA. ** Includes C&S.*

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People

MANUFACTURING

Beech Aircraft Corp. has elected **James N. Lew** and **Lynn D. Richardson** vice presidents, Lew to be vice president in charge of contract administration, and Richardson, vice president of military sales. At the same time, Beech's vice president in charge of manufacturing, **C. C. Pearson,** was elected to the Board.

Fred Kaiser has moved from Minneapolis, where he was field sales manager for Minneapolis-Honeywell Regulator Co., to New York as the company's manager of the Eastern Region.

James E. Maher, formerly assistant to the president of Chase Aircraft Co., has joined the Washington staff of **Chad F. Calhoun,** vice president of the Henry J. Kaiser Co., as assistant to the vice president.

J. D. Strickland, formerly commercial sales manager of Grand Central Aircraft Co., has joined Pacific Airmotive Corp. as aircraft operations sales manager.

Frank J. Hodnick has been appointed ceramic research engineer of Solar Aircraft Co. Prior to his new post, Hodnick was in charge of research and plant control at Canton Stamping and Enameling Co.

W. C. Holmes has been named chief of the power plant engineering department at Northrop Aircraft, Inc.

C. William Laubin, recently senior staff engineer for Kaman Aircraft Corp., has joined Nagler Helicopter Co. as project engineer.

Nicholas M. Stefano, former chief of helicopter research of Hughes Aircraft Co., has been appointed chief engineer of American Helicopter Co. Stefano is also a member of NACA's Helicopter Sub Committee.

Stefano

Stainton

AIRLINES

J. Ross Stainton has been named general sales manager of British Overseas Airways Corp. His former post, as BOAC's manager, North America, has been taken over by **Winston Bray.** For his new position, Stainton will shift his headquarters from New York to the corporation's head office in London.

Charles M. Mason, former director of employe relations for United Air Lines, has been named the company's assistant vice president of personnel.

Russell O. Blaisdell has succeeded

The Most Trusted Name in Ignition

From the Spirit of St. Louis to the Super Constellation

At about the half-way mark in the history of aviation, the whole world was electrified by Lindbergh's daring flight across the Atlantic. Together with a profound admiration for this unparalleled accomplishment, people everywhere began to realize that aviation had truly come of age.

To us in the aviation industry, this spectacular achievement served as a dramatic highlight to the story of aviation's constant progress . . . a story of unremitting research, improved design and sheer courage that began a quarter of a century before this historic flight.

This Division of Bendix is proud, indeed, that Scintilla Magnetos sparked the engine of the Spirit of St. Louis. It is doubly proud that on practically every other outstanding flight, its products have played an important part and that on today's outstanding airplanes such as the new Super Constellation, Bendix Ignition is again helping to set new standards of performance.

Yes, from Lindbergh to Lockheed, the industry has come to know Bendix* as the Most Trusted Name in Ignition.

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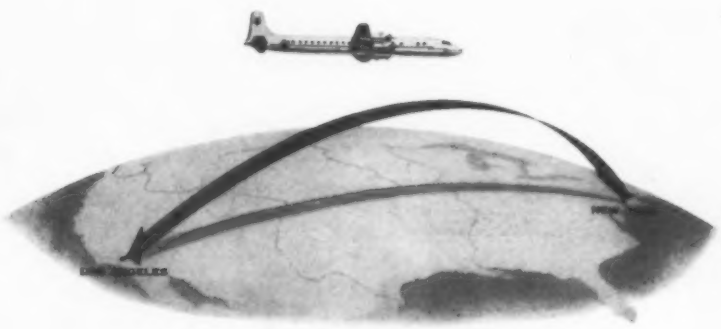


Now-Transcontinental Travel

UNDER 8 HOURS

on the New DC-7 Flagship

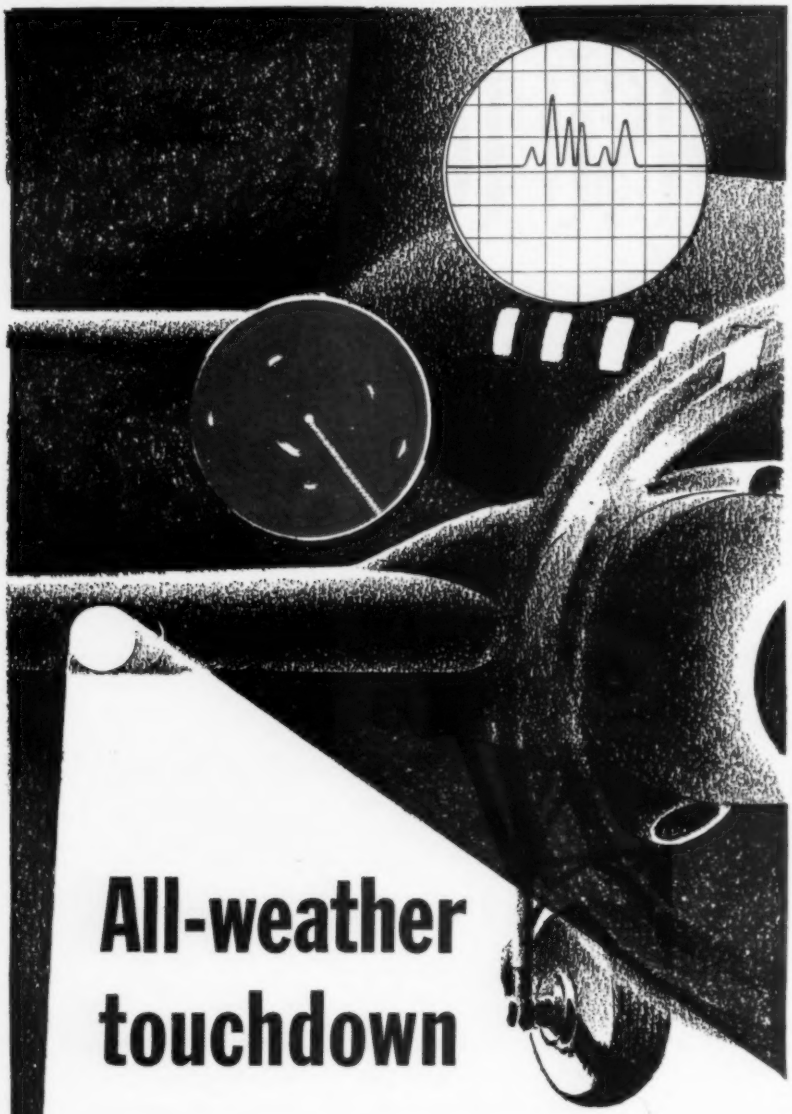
In introducing the new DC-7 Flagship, American Airlines again demonstrates its leadership in air transportation with the first *nonstop* coast-to-coast service. For the first time in history—and at no extra fare—travelers will span the nation in less than eight hours.

Highlighting the many new developments in this magnificent Flagship are the special soundproofing that makes it the quietest plane aloft, the new 3250 horsepower "Turbo Compound" engines, and an air conditioning system that operates on the ground as well as in the air.

Beginning November 29th, there will be two round-trip DC-7 *nonstop* flights daily at regular Flagship fares. Make your reservation with American Airlines now. Be among the first travelers in history to enjoy coast-to-coast service *nonstop*.

AMERICAN AIRLINES INC.

America's Leading Airline



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In 50 golden years of powered flight, we've come a long, long way from "any landing you can walk away from is a good one."

A modern miracle takes place every time a heavily laden high speed aircraft lands in dirty weather. Every resource—every ingenuity—of modern man has been brought to bear on the multitudinous problems of all-weather flight.

Today, the Industry is making further great strides toward the common goal...so that man might fly *safely* and *surely*, when "even the birds are walking." Land-Air is proud of its contribution in this and other fields.

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Charles W. Nason as North Central Airlines' chief pilot. Nason is returning to regular line flying for the company.

Josiah Macy, Jr., has been appointed assistant secretary of Pan American World Airways.

Phillip M. Werner has been appointed United Air Lines' manager of passenger sales from his previous post as Chicago district chief of passenger and cargo sales. Werner will continue his headquarters in Chicago.

R. W. Chambers, formerly station superintendent for Northwest Orient Airlines at Minneapolis, has been named to the newly created position of manager of properties for Northwest's Continental Division.

Charles A. Clover has been appointed Eastern Air Lines' interline sales manager. Clover, recently returned from a tour of duty with the Air Force, was formerly the company's traffic and sales manager in St. Louis.

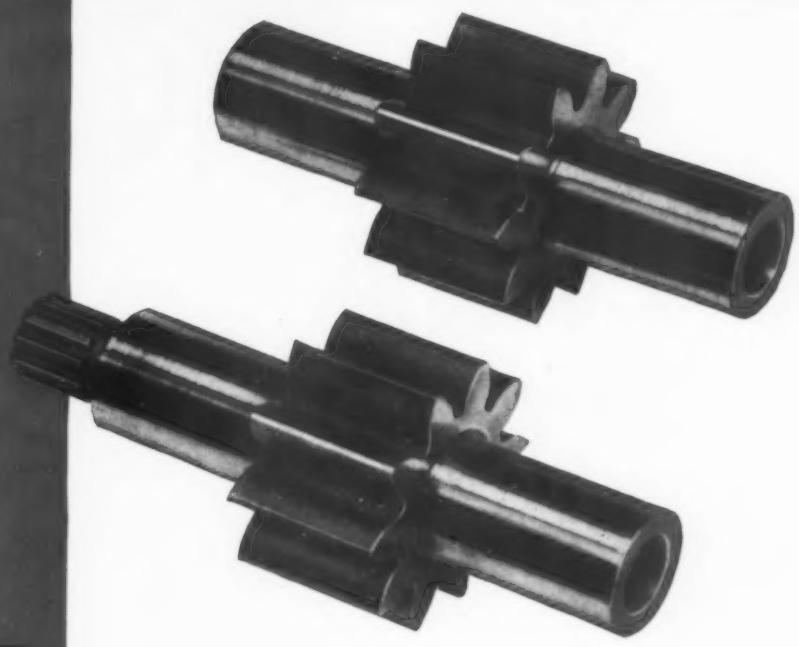
Donald W. McDonald is the new assistant manager of public relations and advertising for Air France. Prior to joining Air France, McDonald was supervisor of copy and research for Pan American World Airways.

Herbert Rich has been promoted to Eastern regional sales manager of Airborne Flower and Freight Traffic, Inc.

Al Wagstaff has been promoted from acting London district manager for Philippine Air Lines to manager.

The following employes have recently completed 20 years or more of service in the aviation industry:

- **Leo Bourdon,** Consolidated Vultee Aircraft Corp. Metal fitter assembler, San Diego. 30 years.
- **J. E. Wilkinson,** Consolidated Vultee Aircraft Corp. Assembler, San Diego. 25 years.
- **J. M. Hudson,** Consolidated Vultee Aircraft Corp. Design specialist, San Diego. 20 years.
- **Willis M. Abbey,** Eastern Air Lines. Maintenance foreman, Miami. 25 years.
- **Wall S. Tefft,** Eastern Air Lines. Plane overhaul superintendent, Miami. 25 years.
- **Thomas M. Holdcraft,** Eastern Air Lines. Captain, Miami. 20 years.
- **Robert G. Minick,** Eastern Air Lines. Captain, Miami. 20 years.
- **C. E. Winter,** American Airlines. Cargo sales representative, Detroit. 20 years.
- **E. H. Brown,** American Airlines. Communications equipment supervisor, New York. 20 years.
- **Max L. Lessner,** Pan American World Airways. Operations, Delhi, India. 20 years.
- **J. M. Klopfenstein,** Trans World Airlines. Lead mechanic, Los Angeles. 20 years.
- **R. M. Larson,** Trans World Airlines. Flight superintendent, San Francisco. 20 years.
- **W. F. Peterson,** Trans World Airlines. Captain, San Francisco. 20 years.



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Add *Pesco Simplicity of Design* to Pesco's *exclusive,* patented "Pressure Loading" principle, which results in volumetric efficiencies up to 97% and torque efficiencies up to 90%, and you have two important reasons why so many industrial and aircraft manufacturers have standardized on Pesco pumps.

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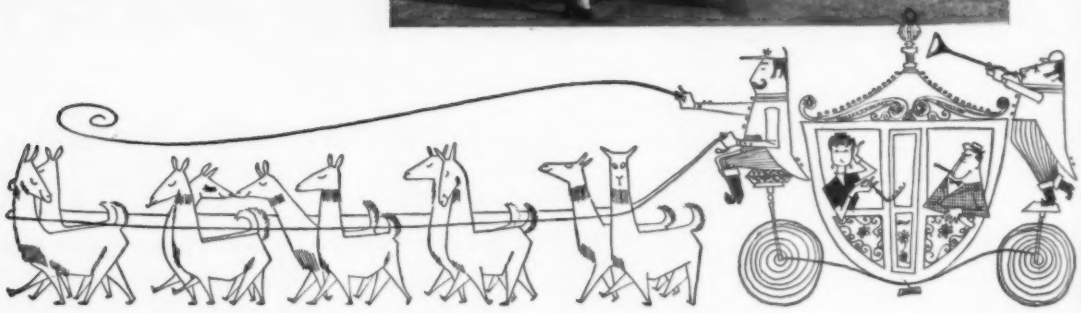

This city's a charmer! It's the Spanish Colonial capital of Latin America, and very continental in contrast to its ancient Indian lore. We make sure a visit's a delight. For instance, we suggest your clients see Pachacamac or Machu Picchu, "the lost city of the Incas". The bullfights or the loveliest flower markets. Perhaps they're looking for a silver service at an incredibly low price. We can show them one in a flash. Or if they think Spanish is spinach, it's apple pie for us and we're on call. Our headquarters is their headquarters, our staff theirs—anywhere they go. Such friendly help has made us famous on two continents.

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Letters

(Continued from page 8)

as the CAB be naive enough to relate percentages of sales expenses on the Atlantic routes with those of our own domestic carriers, [who] are on an equal competitive basis with no guardian and protector to foot the bills for operating deficits? Let them answer, then, that this is a protectionist policy to foster American industry and I shall say that it will never be so long as rates are controlled and regulated internationally to be competitive for all.

Competitive equality in pricing and regulatory matters is endured by the members of IATA, yet our own governmental body attempts to defeat this principle for the sake of an arbitrary percentage point, which has been determined as portentously as a witch doctor's brew and labeled a cure-all.

Perhaps the CAB would do well to re-evaluate its position taking into account some of the time-honored fundamental principles that have come about since the advent of the Industrial Revolution and have helped make this country the great mecca of mass production that it is. The airline industry is still very new and must be advertised and sold. In almost every industry, it has been necessary to increase advertising and sales costs to gain access to mass markets. In almost every case, it can be shown that this increase through advertising and selling has brought about a lower unit cost to the consumer due to the resultant increase in sales. The trans-Atlantic carriers have been no exception to this rule.

Surely keeping international air supremacy in America is worth the slight additional cost that the CAB statisticians claim the higher percentage will bring.

WALTER A. ELSAESSER

Sales Representative
Pan American World Airways
Detroit, Mich.

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OUR DRY-EYED CORRESPONDENTS

To the Editor:

The basic intent of the "Military Commentary" (AMERICAN AVIATION, August 17) was, I naively(?) presume, to induce the flow of tears from my eyes in Niagara-like proportions to learn of the good Colonel's pending exodus from the Air Force scene . . . but tears for whom?

Mr. Baer stated, "He is leaving the service somewhat disgruntled. The dissatisfied and departing officer-etc-etc." This was later followed by, "The 41-year-old serviceman, not yet at the peak of his productive potential, has a high-powered educational background obtained *primarily at government expense*." The italics are you and me plus fifty million or so other (taxpayers) (suckers) CHECK ONE . . . or are they synonymous in this particular instance?

It isn't even necessary to say "who-in-the-hell's kiddin who?", as Baer's last sentence in his verbalism covers that. Quote: "It is indicative of a possible trend, however, and one that actually has been evidenced in recent years by top general officers who gave up the service for key industry positions." The usage of the word "possible" in that sentence is just about as superfluous, arbitrary, and/or as condescending as you can get . . . but we are quite close to the Pentagon, aren't we?

Disregarding the unhappy(?) plight of the Colonel, should I be sorrowed to hear of his subordinates' supposed state of servile peonage? The Colonel says: "The pay and allowances of a major 15 years ago gave him purchasing power not equalled by the pay and allowance of a brigadier general today." In short, he evidently feels that a major should be grossing approximately $12,000 a year. Hah! . . . no apologies offered for my hysterical laughter.

I frankly express extreme amusement to hear of these pained, indignant, many-decibeled yowls and wails emerging from the "brass buttoned" free-loading careermen(?) relative to their imaginary trials and tribulations. So, despite their commissaries, free medical and dental care, housing, pensions, etc., etc., the broad-buttocked majors claim inability to socially or financially emulate or tower above competent civilian junior executives (a status high above, and in all probability unobtainable to, me). That's a damn shame! Personally I'm on the side of the men who have *worked* diligently and conscientiously at *their chosen occupations* . . . (not merely animated a serial number) and who, in consequence, have justifiably attained commensurate remuneration . . . whenever additional taxes to purchase several hundred miles of "WIRE FENCING, ETC." haven't precluded it.

No, I'm afraid Old Jack's heart can't bleed a drop for . . . well, let's say 75% of the "Brass" whose only proficiency is a much practiced adeptness at sucking upon the great public's teat, and who now find the long—Oh, sooo long—overdue process of weaning exceedingly painful to their super-inflated egos and T.O.'s.

It's true indeed that a "flight in a Lockheed T-33 'Shooting Star' back in 1948 is still remembered" by Harry Baer. Gadzooks! to merely contemplate the giddy heights to which his lauding prose of the "Men in Blue" would rise following a courtesy(?) hop in a B-47 is frightening. My personal recommendation is that he be permitted to obtain first-hand facts concerning the in-flight characteristics of Martin's B-61 "Matador" if he continues these abortive attempts to add dignity to farces such as these.

Yes, I am acquainted with Kipling's "Tommy Atkins."

JACK O. PLANK

3315C Terrace Drive, S.E.
Washington 23, D. C.

•

T. E. BRANIFF

To the Editor:

I read with great interest your article "T. E. Braniff At Home In The World."

Having been an ardent admirer of aviation since a child, I have always followed stories very closely pertaining to Braniff Airlines. It was very interesting and enlightening to read about T. E. Braniff in the above mentioned issue of AMERICAN AVIATION.

F. E. COMPITELLO

Reaction Motors, Inc.
Rockaway, New Jersey

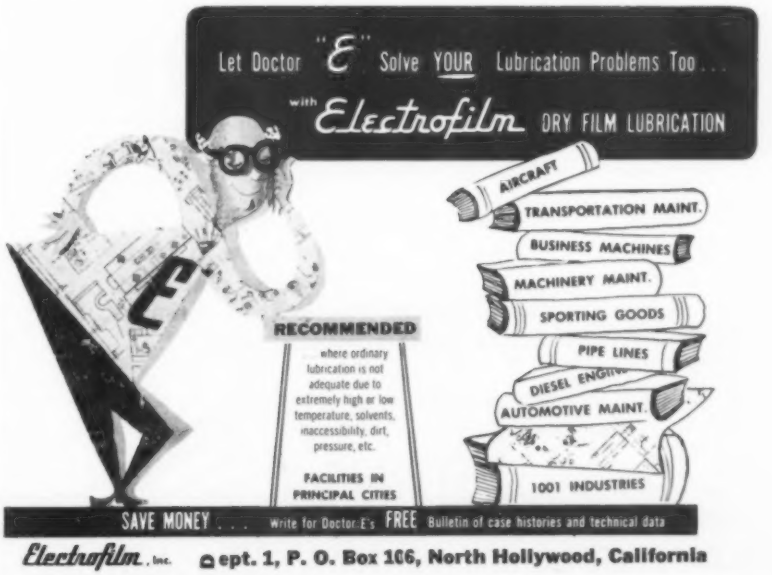
•

END OF PROMOTION?

To the Editor:

In fairness to those of us who operate without subsidy, I'd like to express a viewpoint that disagrees with your editorial of August 17, 1953, which ends by saying: "It is clear that the promotional stage of air transport in the U.S. has reached an end."

I believe this viewpoint is terribly in error, and my own opinion is that we are just starting to "put our long pants on," in transport aviation.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Within easy memory are statistics showing that we are now matching the railroads in first-class passenger carriage, that airfreight makes sense, and that the old-line carriers are out of the subsidy classification.

Most local service lines still need, and should get, further subsidy. This sounds funny coming from me, as we are applicants for a certificate without subsidy (our peculiar route geography renders it unnecessary if certification is provided). I firmly believe that if a portion of presently available local service subsidy funds were diverted temporarily to the production of a proper feeder-liner, and also to a feeder-converti-plane, that most local service airlines could reach service rate mail pay status in a very short time thereafter.

I don't for a minute believe the promotional stage in our history is over. The common sense era is just starting.

FREDERICK H. SMITH
Island Air Ferries, Inc.
Bohemia, N. Y.

•

'COPTER CONVERSION

To the Editor:

Your considerate editorial treatment of the helicopter conversion by Lockheed Aircraft Service-International for New York Airways is deeply appreciated. The boys at Idlewild feel that with this effort behind them that much has been learned of value to the industry, and they are indebted to you for conveying it to your readers in that segment of your readership.

CHARLES E. McGEE
Mel Adams and Associates, Inc.
18 East 41 Street
New York 17, N. Y.

•

GOVERNOR PROBLEMS

To the Editor:

We have noted the comments of Mr. W. J. Whitehead of the Woodward Governor Company on the statement which was included in the "Turbine Boosts 'Copter Performance" article of your May 25th issue. We are inclined to sympathize with Mr. Whitehead, but we regret that there has been a misunderstanding. We would like to amplify some of the results arising from our tests of the Woodward Governor on the turbine-powered helicopter, and hope that it will be clear to your readers that the governor did not in itself malfunction, but rather that the "governor-turbine" combination was not a desirable installation in the helicopter.

Originally we were beset with a minor problem wherein the governor was set too low to permit full power and operating rpm to be obtained from the turbine. When this was corrected it was ascertained that the governor functioned quite adequately, limiting the top rpm of the output shaft. However, the "turbine-governor" characteristics were such that at governed speed extreme fluctuations of the turbine's power output occurred, until the output shaft speed was reduced to 'cut out" the governor.

Although the governor was adequate in protecting the turbine against overspeed, the fluctuations at governed

Nineteen hundred and fifty-three marks man's first half-century of powered, heavier-than-air flight. Fifty years ago, on December 17, 1903 the Wright Brothers successfully built and flew a 12 horsepower biplane. For 12 historic seconds Orville Wright took the controls over Kitty Hawk.

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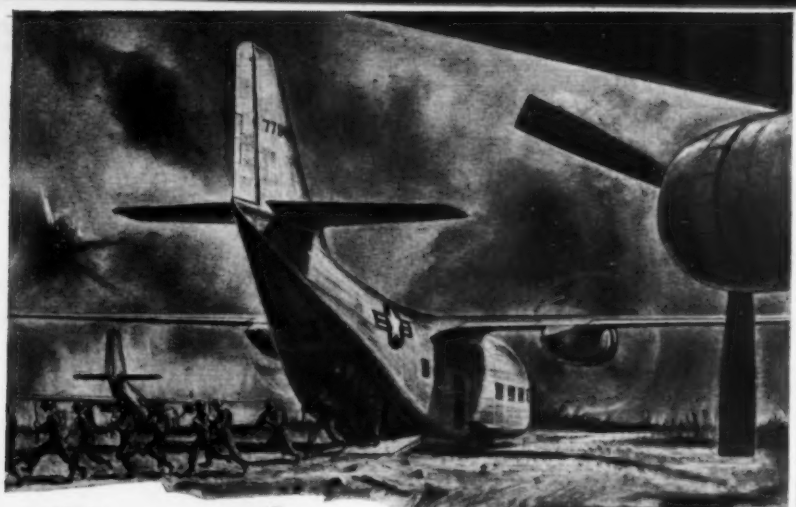

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STROUKOFF AVITRUC

speed were undesirable, should the pilot inadvertently overspeed in flight.

We would like to make it clear to Mr. Whitehead that we were not using the governor as a means of controlling rotor rpm, as he has suggested, and as the need for an overspeed governor in this installation was a somewhat controversial matter, as soon as we experienced these fluctuations at the governed speed, we elected to dispense with the governor entirely.

It is worthy of note that the throttle sensitivity to altitude mentioned in the same article has been substantially improved by the introduction of a Woodward Governor into the fuel control.

We trust that these additional words of explanation will remove any suggestion of criticism of the Woodward governor.

JOHN O. EMMERSON
Chief Engineer
The Kaman Aircraft Corporation
Bloomfield, Connecticut

•

CARTOONS

To the Editor:

Your cartoons, portraying select members of the airline family, came to my attention last week in Miami. And I may add that they are the best I have ever seen.

I am a pilot for an oil company in Dallas, Texas, and I would like to have two each of the pilot and the mechanic. I think that the boys in Dallas will get a big kick out of them.

ART THOMAS
3300 Love Field Dr.
Dallas, Texas

•

BATTERY ACID

To the Editor:

In connection with an article on page 61 of the June 22, 1953, issue of the AMERICAN AVIATION Magazine, in the last full paragraph . . . reference is made to the fact that [with this type of battery] no special vented compartment is necessary to protect against acid spillage. I would be interested to know just where the acid would come from in an alkaline battery.

. . . Most people think of the electrolyte in the battery being of the acid type. This has been brought to our attention many times in connection with electrolyte burns which occur in the coal and metal mines. Occasionally a company doctor treats electrolyte burns as an acid, whereas it is an alkaline burn, and such treatment causes the patient to become worse instead of better.

GRAHAM BRIGHT
Chief Electrical Engineer
Mine Safety Appliances Company
210 N. Braddock Ave.
Pittsburgh 8, Pa.

(Chief Engineer Bright refers to the statement: "Aircraft installation is also simplified. No special vented compartment is needed to protect against acid spillage, fumes, etc." The statement, aimed at readers with less detailed knowledge of battery operations, was used to explain that since these batteries use no acid, related safety provisions were not

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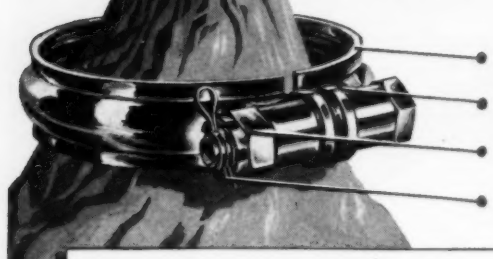

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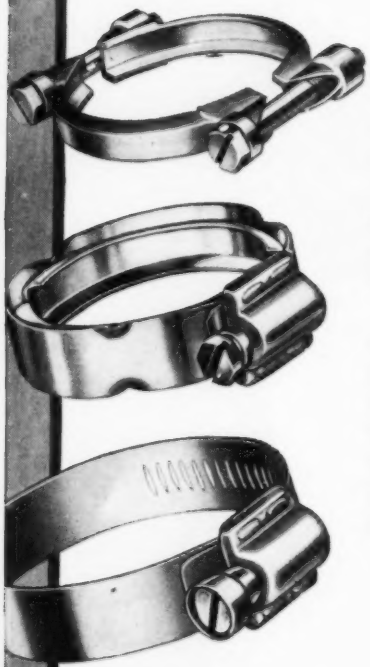

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required, as they are with the ordinary lead-acid types.—Ed.)

WILD-CAT CABS

To the Editor:

I noted in the August 17 issue of AMERICAN AVIATION that in your "Airline Commentary" column there was brief reference to the deplorable cab situation at the front door of this terminal building.

Believe me, what you said was absolutely correct. We are a city-owned airport, surrounded by a county—a county that has had no regulation of its taxi cabs in any way, shape, or form. About a week ago, the county finally enacted a model cab ordinance, one that has in the last few days straightened out our cab situation almost completely. The known gangsters and hoodlums that were operating from our door have been eliminated. All taxi cabs are now metered, and the rates are published on the cabs.

I believe that you can tell your readers now that it is safe to take a cab from this airport, something that I could not have told you a few weeks ago. Knowing the caliber, in general, of cabdrivers, however, I believe that some few instances may still arise regarding overcharging, etc., but now that all cabs are licensed, we can take definite action on any such complaints. The matter of this wild-cat cab situation would be ludicrous were not its repercussions occasionally serious.

DAVID E. LEIGH
Airport Manager
Lambert-St. Louis Municipal Airport
St. Louis, Missouri

•

MODIFIED TRANSMITTER

To the Editor:

We note with interest the article describing the KLM modification to the Collins Radio Company-designed ART-13 transmitter in your August 3, 1953, issue . . . We had heard rumors of this modification from other sources in the past but had never received any firm information regarding it. We certainly must congratulate the Dutch upon an ingenious design modification which no doubt suits their problem very well.

We would like to point out that during our years of manufacturing the ART-13 the weight of the unit—transmitter, shockmount, and power supply—came to approximately 95 pounds. A separate receiver would undoubtedly have to be used, which would add approximately another 30 pounds of weight, making a total of approximately 125 pounds. Newer designs of equipment, such as the Collins 618S with its associated accessories, combine to a total of 104 pounds, including shockmounts, a 21-pound difference.

Various articles in such periodicals as yours have indicated from time to time that the value of one pound per year carried in an airline transport aircraft is approximately $125, so that we are not certain whether the actual saving to companies making such modification is worth while or not. The newer types of equipment probably offer more frequencies with greater ease of frequency selection and lower maintenance costs than some of the older units. Also the problem of spare parts is less.

J. H. HAMILTON
Aviation Sales Mgr.
Collins Radio Company
Cedar Rapids, Iowa

NEGLECTED

To The Editor:

I have been reading with interest the editorial entitled "Prestwick Enigma" in the August 3rd issue of AMERICAN AVIATION.

There are at the present time no less than a total of 96 international services in and out of Prestwick Airport each week; 30 of these are contributed by BOAC and the balance by KLM, PAA, SAS, and TCA. It is perfectly true that BEA operates between London and Renfrew, and it is barely possible that the Scots find the proximity of Renfrew to Glasgow slightly bettter than that of Prestwick. However, if anyone wishes to travel between Prestwick and London or the reverse they are entitled to purchase a ticket enabling them to do so on any one of BOAC's 30 services weekly.

They can also travel to Glasgow by way of Renfrew on BEA. In addition, there are some independent carrier services out of Prestwick. Both SAS and KLM have Fifth Freedom rights into and out of Prestwick and carry quite a lot of passengers. I don't really think that the situation is as black as you paint it.

You call this neglect?

In the immortal words of that great Scotch fictional character, Colin Glencannon—this will cost ye nay a penny more than a bottle of Dugans Dew of Kirkentilloch!

G. A. W. WYNNE
British Overseas Airways Corp.
342 Madison Avenue
New York 17, N. Y.

•

THE VOLUBLE MR. SHANNON

To the Editor:

This letter is written in reference to your item about Sam Shannon on page 53 of the August 17 issue.

My duty stations during operations of the Sea Dart are such that I have always been in radio contact with the boss; hence, just for the record, Sam Shannon's words were "Oh Brother!" and not "Gee Whiz!" as reported.

WARNER LOWE
Flight Test Engineer
Convair
San Diego Division

(West Coast Editor Fred Hunter, reporting a rough landing during one of the Sea-Dart trials, quoted Pilot Shannon as saying nothing but "Gee Whiz!" and then swung confidentially out on a limb by adding: "If Jack Naish tells you this story and quotes Sam as saying 'Oh, Brother!' it's an example of how stories get garbled in re-telling." Since this will apparently be one of the landmarks of the next 50 years of powered flight, let's get it right; any more outlying counties to be heard from?—Ed.)

PHOTO CREDITS

Cover—SABENA; 6—BEA, Ankers; 15—Boeing; 16—Boeing, Republic; 17—Boeing, P&W, British Information; 18—Sperry; 19-Martin; 28—North American; 30—Convair; 39—Marquardt; 52—Convair, Fairchild.

Equipment Needed at modern airport is shown in this scene at Kansas City Municipal Airport. Clockwise from the left: carry-all two-wheel trailer; sidearm mower and tractor; electricians' trailer; painters' trailer; four-wheel-drive pickup truck with auxiliary fire equipment; supt. of maintenance pickup truck; another pickup truck; four-wheel drive Dodge dump truck, used with snow plow attachment in winter; Dodge heavy dump truck, used with snow plow attachment in winter; four-wheel-drive dump truck, used with snow plow in winter; large Snow-Go; tractor; small mechanical street sweeper (for use on ramp); power grader; mobile air compressor; tractor. From right to left in front: hi-loader; roller; tractor with broom attachment; passenger car; inspector's car. Three pieces of fire equipment in building at foreground, faced toward field, are not shown in picture. The airport has its own complete maintenance shop for this equipment in the building in background. This building comprises maintenance shop, control tower, fire station, and complete offices.

First flight of Cessna Aircraft's second Model 310 small twin-engine transport has been completed. It is now beginning the thousand-hour accelerated service test. The first plane is currently being used as a "modification" unit to gather data for certification.

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Financial Briefs

The Glenn L. Martin Co. reports unaudited earnings of $4,503,165 on $70,982,577 sales in first six months of 1953, against $540,279 profit on $66,-151,239 sales in same 1952 period.

Piper Aircraft Corp. had nine-month net to June 30 of $245,416 on $9,241,082 sales, compared with $249,-652 net on $7,374,103 sales in comparable period last year.

Fairchild Engine & Airplane Corp. reports first-half profit of $2,108,000 on $84,137,000 sales. Same 1952 period showed $1,228,000 net on $51,375,000 sales.

Temco Aircraft Corp.'s net for first half was $906,341 on $27,505,040 sales against $860,222 profit on $25,064,518 sales in same 1952 period.

Jack & Heintz' second-quarter earnings reached $380,600 on record sales of $10,934,500. First-half net was $670,600 on $18,625,800 sales compared with $520,400 on $16,990,800 in 1952 period.

Aeroquip Corp. net and sales for nine months to June 30 were $708,722 and $15,724,783, respectively, against $633,165 and $15,170,946 for same months last year.

Ryan Aeronautical Co. declared regular 10¢ quarterly dividend, payable September 11 to stockholders of August 21.

North American Aviation reports $7,990,000 profit on $460,712,180 revenues for nine months ended June 30, against $5,200,000 net on $204,229,069 in same 1952 period.

Temco Aircraft Corp. increased capital stock from 1,300,000 to 3,000,000 ($1 par value) shares. Newly-authorized stock won't be issued at this time.

Aero Supply Manufacturing Co. established a $1,250,000 revolving credit with Chase National Bank to finance defense contracts and pay off a $750,000 loan from Chase. Credit terminates Apr. 30, 1955.

Delta-C&S Air Lines reports a net profit (unaudited) for fiscal year ended June 30 of $1,402,117, plus special items of $2,756,561, making a total of $4,-158,678, equivalent to $6.93 a share. The figures do not cover operations of Chicago & Southern Air Lines prior to the May 1 merger.

Delta-C&S Air Lines declared 30¢ dividend, payable September 7 to stockholders of August 21.

Resort Airlines' delayed annual report for 1952 reports $409,674 loss, after tax refunds, compared with 1951 net after taxes of $783,758.

United Air Lines had record earnings of $3,727,453 for the second quarter and $4,068,416 for the first half. Comparable 1952 profits were $3,129,875 and $3,782,565, respectively.

Capital Airlines' first-half profit totaled $654,226 on $21,974,611 operating revenues. Company lost $84,208 on $18,063,786 revenue in 1952 first half.

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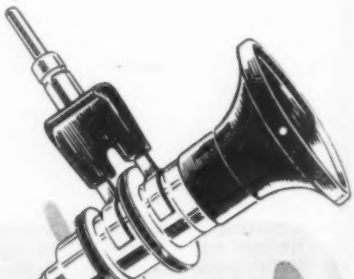
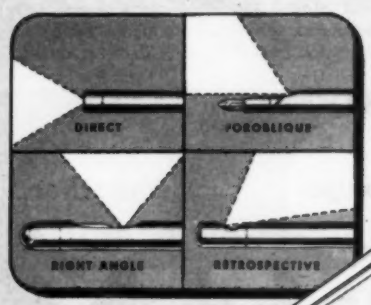


A.C.M.I. BORESCOPES..



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Work Speeded on Automatic Reservations

Airlines expect to operate New York system by 1956; vote $10,000 to prepare final specs, obtain bids.

By Eric Bramley

THE DOMESTIC airlines' long-planned automatic reservations system can be expected to be in operation in New York City by 1956 and to be extended to the midwest or midsouth two years later, according to airline traffic officials. Eventually the system is to cover the entire U.S.

This switch to an electronic means of controlling reservations will be one of the biggest changes ever made in the airlines' method of doing business. It will eliminate, or greatly reduce, many manual functions dealing with accounting for space, which require a considerable portion of the man-hours in a central control office. City ticket offices will sell and cancel space as easily as reservations offices, and there'll be no need for telephone communication between ticket agents and reservations agents.

The carriers have had an Air Traffic Conference subcommittee working on automatic reservations for six years. Little has been said about the group's work. However, it is now speeding work on these important steps:

• **Survey of the firm requirements** of all interested airlines in New York.

• **Preparation of final specifications,** including equipment quantities determined by the survey. Some manufacturers have been studying preliminary specs since last March.

• **Obtaining of firm bids** for purchase or lease of the system.

The airlines, through the Air Transport Association, have voted $10,000 to carry out this phase of the work, which is expected to be completed within six months. They will hire a project manager and a communications engineer to work under direction of ATC's subcommittee.

American Airlines was not asked to contribute to the $10,000 fund because of the assistance it has already given the industry, which received valuable benefits from studying and observing the AA Reservisor, automatic system installed in New York last year.

Here's what the initial New York system is expected to include:

• **A master control unit,** which will (1) contain an inventory of space on all flights for a period of up to 124 days; (2) automatically add and subtract from the inventory as sales and cancellations are recorded by agents; and (3) disseminate information by teletype to all interested offices each time a sale or cancellation changes the status of space on a leg of a flight.

• **Agent sets** in reservations offices, airport ticket offices, other offices in the metropolitan area, and in central control offices of two carriers in distant cities. These are the sets used by agents to transmit sales or cancellations to the master control unit.

• **Master agent sets** at certain supervisory positions to set up initial inventory of seats and to determine remaining space available for sale on any leg of a flight.

Thus, the proposed system is somewhat similar to AA's Reservisor because, as one subcommittee member put it, "the two independent analyses (by AA and ATC) led the parties involved to similar conclusions."

The basic plan of expansion is first to "remote" the New York device to adjoining cities, such as Boston and Washington. After that there will be a second installation in the midwest or midsouth. Eventually five or six master control units will cover the entire U. S.

"We could cover the U.S. with one unit, but we believe that our communications expense would be too high," says Rodney King, Eastern Air Lines general traffic manager, a subcommittee member, and one of the first traffic men to become interested in automatic reservations. "Add to this the fact that we would have all our eggs in one basket. Just now, we think it undesirable."

How much will a New York installation cost? The subcommittee, after studying tentative requirements of six carriers (AA, EAL, UAL, TWA, NWA, and NEA) estimated that "service can be provided at a total cost of 5.8¢ per passenger boarded . . . and the absolute maximum cost per passenger will not exceed 8¢." Use by more carriers could ultimately drop the cost as low as 1.5¢, it added.

These cost figures include floor space rental; transportation for maintenance purposes; supervision; fire insurance; employe taxes, insurance, retirement, and workmen's compensation; heat, light, water, and power; telephone and telegraph; depreciation; earning power or profit on the capital investment; and the cost of acquiring capital, the subcommittee said.

The figures do not include cost of installing agent sets and associated equipment in airline offices, cost of power consumed by these units, or cost of providing designation information on destination plates.

Industry work on automatic reservations started in December, 1947, when a study was authorized by ATC. Two years later the subcommittee published a report stating that automatic systems were possible and that industry application appeared feasible. ATC authorized and appropriated funds for investigation of the possibility of installing a test system in New York, but work was suspended in mid-1950 so the subcommittee could follow development and manufacture of AA's Reservisor. In March, 1953, preliminary specs for a New York installation were circulated.

Thus, almost 10 years will have elapsed from the time the first study was approved until the New York system is in operation. Quicker action has not been possible because this is a major change, similar to a switch from piston-engine to jet-powered aircraft. The industry must be certain it's right before any moves are made. Initial expense will be substantial; there's little room for mistakes. • • •

New ticketing system being tried by Northwest Airlines at Twin Cities and Chicago employs model 11-4 machine made by Addressograph-Multigraph Corp., Cleveland. Agent places addressograph plate and ticket in machine, which operates with hand lever, and fare, routing, and destination are printed. Advantages, NWA states, are time saving, accuracy and legibility. Machine costs $55; plates are 50c each or $18 per 100.

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NEW DOUGLAS DC-7's

COAST-TO-COAST!

Another significant achievement in commercial aviation is scheduled for this fall when American Airlines inaugurates its new, coast-to-coast service—the first scheduled non-stop coast-to-coast—and, in under 8 hours!

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U. S. International Airline Traffic for Six Months Ending June 30, 1953

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	U. S. MAIL TON MILES **	FOREIGN MAIL TON MILES	EXPRESS TON MILES	FREIGHT TON MILES	TOTAL TON MILES REV. TRAFFIC	AVAILABLE TON MILES FLOWN	% AVAILABLE TON MILES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	54,526	40,420,000	58,980,000	68.53	92,357	25,601	3,956	1,176,713	5,594,921	8,369,784	66.85	1,207,334	1,201,274	99.87
Braniff	16,505	38,718,000	92,269,000	41.96	306,203	47,355	. . . .	499,604	5,155,764	12,814,572	40.23	2,097,727	2,145,768	97.76
Colonial	27,926	21,653,000	31,426,000	68.90	10,414	2,994	. . . .	32,637	2,366,123	4,094,169	57.79	535,528	291,006	96.55
Delta-C&S *	17,936	21,506,000	42,668,000	50.40	33,077	4,707	. . . .	646,140	2,925,535	5,916,696	49.45	914,222	923,052	98.29
Eastern	70,359	104,021,000	153,815,000	65.50	289,019	. . . .	. . . .	306,892	12,370,042	21,009,001	58.88	2,476,000	2,088,361	98.61
National	46,663	22,639,000	51,410,000	44.04	26,172	. . . .	15,219	171,894	2,536,017	6,383,830	39.60	345,932	859,096	98.30
Northwest	37,636	62,436,000	115,319,000	54.14	648,215	162,601	94,848	3,969,525	11,605,774	13,933,292	61.30	3,173,623	3,170,192	99.95
Panagra	61,606	67,416,000	119,732,000	56.30	179,171	164,594	. . . .	1,325,795	9,116,731	16,155,363	56.43	2,973,198	2,397,425	99.11
PAA														
Latin Amer	411,083	381,426,000	569,861,000	66.93	1,527,182	395,408	. . . .	12,224,645	51,462,174	79,134,472	65.04	12,871,999	11,432,305	97.86
Atlantic	314,086	309,487,000	529,130,000	58.49	2,828,330	809,458	. . . .	5,929,567	42,752,880	70,228,911	60.88	9,025,556	8,924,462	94.68
Pacific	63,048	210,589,000	331,036,000	63.61	2,365,665	501,148	. . . .	3,580,877	29,264,308	51,714,828	56.59	6,112,432	6,034,458	99.19
Alaska	28,565	31,038,000	72,012,000	43.10	206,001	. . . .	. . . .	2,411,867	5,859,345	11,145,647	52.57	1,681,680	1,535,702	99.77
TWA	96,518	243,342,000	349,955,000	69.55	2,308,681	872,467	. . . .	3,773,310	32,753,648	46,365,606	70.64	7,724,559	7,759,310	98.65
United	25,402	62,990,000	97,101,000	64.87	354,111	. . . .	. . . .	267,122	7,268,078	12,631,278	57.54	1,814,676	1,325,266	96.29
TOTALS	1,271,859	1,617,721,000	2,614,714,000	61.87	11,193,598	2,986,333	114,023	35,976,618	221,027,510	364,902,454	60.57	53,509,466	51,142,682	97.49

* Was formerly route of Chicago and Southern Air Lines. Merger between Delta Air Lines and C & S was effective May 1, 1953, Delta being the surviving company.

** Includes air parcel post.

NOTE: 1. Above figures include both scheduled and non-scheduled operations.
2. Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; Delta-C&S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

U. S. Local Service Airline Traffic For June, 1953

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON MILES	EXPRESS TON MILES	FREIGHT TON MILES	TOTAL TON MILES REV. TRAFFIC	AVAILABLE TON MILES FLOWN	% AVAILABLE TON MILES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
Allegheny	20,548	3,019,000	5,991,000	50.40	5,273	9,511	. . .	302,905	684,691	44.24	285,288	282,913	98.80
Bonanza	5,645	1,313,000	3,517,000	37.33	1,673	1,530	2,314	131,122	350,088	37.45	140,687	141,180	98.59
Braniff*	5,140	997,000	1,956,000	50.97	2,081	1,779	3,020	101,909	195,569	52.11	81,487	83,040	98.04
Central	3,532	567,000	2,881,000	19.68	3,296	1,033	2,125	60,634	364,754	16.62	151,981	150,930	99.71
Frontier	11,554	2,724,000	7,573,000	35.97	7,500	5,193	37,616	310,228	721,292	43.01	361,754	358,200	99.45
Lake Central	6,056	880,000	3,551,000	24.78	2,404	6,962	. . .	85,867	383,109	22.41	159,629	160,620	98.77
Mohawk	15,581	2,582,000	4,640,000	55.65	2,451	4,958	3,893	238,444	545,577	43.70	220,943	219,644	98.19
N. Central	22,898	4,087,000	8,834,000	46.26	8,929	15,773	. . .	410,774	1,005,473	40.85	419,649	426,773	98.18
Ozark	11,721	2,008,000	6,466,000	31.05	3,718	5,491	. . .	198,978	637,582	30.89	258,653	257,808	98.99
Piedmont	25,764	5,308,000	10,936,000	48.32	9,444	8,497	16,505	543,275	1,255,505	43.27	523,127	520,725	99.46
Pioneer	12,139	3,579,000	8,237,000	43.45	8,255	3,325	12,020	365,733	800,800	45.67	228,800	229,580	99.30
Southern	10,042	1,727,000	5,422,000	31.85	6,185	4,876	. . .	176,099	587,555	29.97	258,209	259,314	99.57
Southwest	16,824	3,395,000	6,313,000	53.78	6,625	3,747	9,445	343,502	695,547	49.39	249,756	236,878	99.27
Trans-Texas	6,704	1,522,000	4,736,000	32.14	5,328	2,569	7,404	160,452	541,303	29.66	225,543	224,850	99.98
West Coast	16,321	2,928,000	6,743,000	43.42	3,708	2,030	4,009	274,045	651,802	42.04	322,301	321,795	99.19
Wiggins	382	43,000	173,000	24.86	104	365	. . .	4,363	18,440	23.66	43,529	46,384	93.22
TOTALS	190,851	36,679,000	88,019,000	41.67	76,974	77,639	98,351	3,708,330	9,439,087	39.29	3,931,336	3,920,634	99.01
						Helicopter Services							
HAS	. . .	. . . .	. . . .	. . .	2,780	. . .	. . .	2,780	6,103	45.55	30,540	30,544	99.99
Los Angeles	. . .	. . . .	. . . .	. . .	4,882	. . .	. . .	4,832	13,831	36.30	30,398	31,276	97.19
N.Y.Airways	. . .	. . . .	. . . .	. . .	4,526	. . .	221	4,747	12,652	37.52	31,629	34,882	90.67

* Figures cover operations of local service route 106 operated by Braniff Airways as result of Braniff-MKA merger.

NOTE: Above figures include both scheduled and non-scheduled operations.

U. S. Local Service Airline Traffic For Six Months Ending June 30, 1953

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON MILES	EXPRESS TON MILES	FREIGHT TON MILES	TOTAL TON MILES REV. TRAFFIC	AVAILABLE TON MILES FLOWN	% AVAILABLE TON MILES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
Allegheny	90,292	13,028,000	32,822,000	39.69	30,729	62,237	. . .	1,335,783	3,751,188	35.61	1,562,995	1,609,713	95.05
Bonanza	34,851	8,253,000	19,884,000	41.50	10,757	11,682	13,937	826,117	2,052,043	40.26	795,370	796,479	98.39
Braniff*	25,394	4,857,000	10,995,000	44.17	11,042	12,893	20,167	506,908	1,121,618	45.19	467,371	498,645	93.68
Central	24,125	3,517,000	18,820,000	18.69	18,232	6,734	14,170	373,486	2,219,029	16.83	924,596	935,360	98.45
Frontier	61,843	15,851,000	46,644,000	33.98	48,590	33,367	210,509	1,805,633	4,442,006	40.65	2,226,570	2,235,976	97.99
Lake Central	22,321	3,327,000	14,155,000	23.50	8,926	33,359	664	346,122	1,566,903	22.09	653,567	683,730	94.27
Mohawk	72,622	11,899,000	24,141,000	49.29	15,324	32,544	28,837	1,146,882	2,733,745	41.88	1,123,897	1,140,330	94.55
N. Central	91,278	15,203,000	40,294,000	37.73	47,120	75,051	. . .	1,553,960	4,586,454	33.88	1,914,903	2,113,268	90.48
Ozark	53,643	9,154,000	34,625,000	26.44	21,312	31,108	. . .	910,628	3,414,060	26.67	1,383,682	1,457,480	94.10
Piedmont	124,295	26,424,000	53,661,000	45.04	43,175	50,288	88,584	2,717,427	6,705,866	40.52	2,794,111	2,863,922	96.29
Pioneer	80,711	22,734,000	54,796,000	41.49	58,739	20,785	80,550	2,333,877	5,327,376	43.81	1,522,107	1,562,699	97.29
Southern	55,657	9,629,000	31,255,000	30.81	39,090	34,138	. . .	997,586	3,338,656	29.44	1,438,337	1,534,975	96.84
Southwest	85,863	16,947,000	31,785,000	53.32	40,075	20,358	63,839	1,740,127	3,593,233	48.43	1,414,621	1,392,183	98.02
Trans-Texas	41,752	9,177,000	28,755,000	31.91	35,634	16,796	46,503	973,705	3,287,260	29.62	1,369,692	1,387,894	98.04
West Coast	77,572	13,876,000	37,302,000	37.20	20,429	11,182	23,365	1,315,952	3,473,523	37.88	1,778,205	1,813,313	97.63
Wiggins	1,360	144,000	813,000	17.71	467	1,361	. . .	14,766	85,720	17.22	203,573	277,968	72.22
TOTALS	943,579	184,020,000	485,747,000	37.88	454,641	454,383	591,125	18,898,959	51,753,680	36.52	21,623,597	22,303,935	95.77
						Helicopter Services							
HAS	. . .	. . . .	. . . .	. . .	14,752	. . .	. . .	14,752	33,236	44.38	166,181	175,137	94.89
Los Angeles	. . .	. . . .	. . . .	. . .	26,225	. . .	. . .	26,225	71,605	36.62	166,325	181,547	91.61
N.Y.Airways	. . .	. . . .	. . . .	. . .	17,815	. . .	543	18,372	55,404	33.16	133,509	170,818	81.08

* Figures cover operations of local service route 106 operated by Braniff Airways as result of Braniff-MKA merger.

NOTE: Above figures include both scheduled and non-scheduled operations.

Charge Miller Controls Two Carriers

A CAB enforcement proceeding against the non-scheduled airline Air America, Inc., has produced charges that Fred A. Miller, current president of U. S. Airlines, Inc., certificated cargo carrier, still maintains control of Air America and is therefore in violation of the Act.

The charges were made by Enforcement Attorney William J. McAuliffe, Jr., who said a trust agreement, under which Miller's 880,000 shares of Air America stock are held by William D. McCoy, trustee, legally can be interpreted as giving Miller control of the stock and, accordingly, control of two airlines at the same time, without CAB approval.

McAuliffe also revealed that Gen. Russell E. Randall, Miller's successor as president of Air America, no longer holds that position, having been replaced on April 29, 1953, by McCoy, the trustee of Miller's stock, and a member of the underwriting firm of McCoy and Willard.

Portions of the Civil Aeronautics Act provide that interlocking relationships shall not exist unless approved by the Board. There are no indications that CAB has given formal or informal approval of Miller's alleged holdings.

Whether or not the U. S. executive is in violation of the Act, however, appears to hinge on a legal interpretation of the trust agreement. Miller reportedly claims it is "irrevocable" and that he, therefore, cannot touch the stock. The CAB enforcement office holds the agreement to be "revocable" and that means, they say, that Miller "has the power to control and the power to control is control itself."

Here is the way enforcement attorney McAuliffe sums up the Miller-McCoy relationship: "McCoy is trustee of Miller's stock in Air America; he is a partner in the firm of one of the underwriters of the U. S. Airlines' proposed stock issue of 1,000,000 shares of its common stock; and he is a stockholder of U. S. Airlines. Mr. Miller is president of U. S. Airlines."

The matter will come before the Board for oral argument in the near future.

Slick-Tiger Merger Meets Opposition

CAB's Air Operations Bureau has recommended disapproval of the Slick-Flying Tiger merger agreement or deferral of Board action pending outcome of the certificate renewal proceeding involving the two all-cargo carriers. It was the first indication of the staff position on the merger.

Bureau Counsel Francis H. McAdams said the record in the case will not "permit the Board to find that the merger will aid in effectuating the purposes of the Act."

The position was made known as parties to the case filed briefs with Examiner F. Merritt Ruhlen. Also opposing the merger were American Airlines, United Air Lines, and the Slick Airways Pilots Association. Slick and FTL, in a joint brief however, said "the only thing wrong with the merger is the period of time necessarily involved in obtaining Board approval."

American claimed the record "plainly shows that both Tigers and Slick have engaged in a variety of air operations and have not concentrated on the development of all-cargo service." Almost three-quarters of Tiger's revenue in 1952, AA said, came from sources other than scheduled cargo.

The CAB staff said the proposed merger will not result in the development of an integrated and coordinated system of transportation nor in any substantial benefits to the public.

CAB MISCELLANY

Kirksville, Mo., and Shelby, Mont., want airline service by Ozark Air Lines and Frontier Airlines, respectively.

Pan American-Grace Airways has asked CAB sanction of a special 25th anniversary flight carrying "Junior Ambassadors" from seven Latin American countries on a two-week U. S. tour about October 1.

Northwest Airlines-Flying Tiger Line agreement calling for seven-year lease of new FTL DC-6B aircraft to NWA approved by CAB.

American Airlines wants CAB to deny Slick Airways' petition for compulsory 25% increase in air freight rates on October 1. AA says the need for increased volume can not be satisfied by a rate increase.

Pan American World Airways is operating under new mail rates for its Latin American Division which are designed to yield annual mail pay of about $13.1 million.

EXECUTIVE AIRCRAFT OVERHAUL

BY

TEMCO

CASE HISTORY: #811-117
CUSTOMER: AMERICAN FLYERS AIRLINE CORPORATION
SHIP: DC-3 N-33656

Precision overhaul at TEMCO-Greenville included 4000 hour inspection on outer wings; replacement of center section wing doubler and attach angle. Installation of Douglas air step kit to existing cargo door. Bolts replaced on attach angle with torque wrench to assure even tension under flight conditions. Same operation also applied to American Flyers DC-3 N-19922 (Case History #811-120):

Owners of multi-engine executive aircraft may now look to TEMCO-Greenville for one of the most comprehensive overhaul-modification services in the nation. Formerly available only to government agencies and to the airlines, TEMCO-Greenville's modern production-line facilities offer a unique rehabilitation service backed by a reputation for producing *faster, better and at lower cost.*

For full details on this case history and information about TEMCO's complete custom rehabilitation service for multi-engine aircraft, write on business letterhead to:

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CAB News

AS OF NOW . . .

The question of whether Twentieth Century Airlines, of the North American group of large irregulars, can continue to use the name "North American Airlines," has been taken under advisement by the five-man CAB. Last procedural step was completed early this month. A decision is expected within a month.

Next step in the **Reopened Trans-Atlantic Cargo Case**, which involves cargo certificate applications of Seaboard & Western, et al., is an examiner's report not due for another three to six weeks at least. With briefs, oral argument, CAB decision, and White House action also needed, the case is not likely to be completed this year.

The Domestic Air Freight Forwarder Investigation, slated for hearings in January, 1954, has been enlarged again to include a new investigation into Air Cargo, Inc.'s application to operate as a forwarder.

Hearings in the **Large Irregular Air Carrier Investigation**, currently going strong in Los Angeles, passed the one-year mark on September 3. With Seattle and Washington, D. C., sessions still to go, the hearings willl run well into 1954, and a final CAB decision is not likely until 1955.

RECENT CAB DECISIONS

- **Trans Air Hawaii**, non-certificated cargo carrier, ordered to suspend unless overdue reports are filed.
- **E. W. Wiggins Airways** granted an exemption to use that name in air taxi operations.
- **Lehman Brothers** Interlocking Relationships Investigation decision of May 21, 1952, stayed for additional period pending Supreme Court review of decision.
- **Lake Central Airlines** granted temporary mail rate increase of approximately $82,644, bringing total temporary to $1,414,094 on annual basis.

CAB CALENDAR

Sept. 14—Hearing in Cuba Aeropostal, S. A. Havana-Miami Case. Washington, D. C. Docket 4897.

Sept. 17—Oral argument before the Board in Airline Reservations, Inc. Enforcement Proceeding. Washington, D. C. Docket 5878.

Sept. 17—Hearing in The Spearfish Suspension Case (Western Air Lines). Deadwood, S. D. Docket 6200.

Sept. 21—Hearing in Williston Basin Area Case (Civic Intervenors). Billings, Mont. Docket 5777 et al.

Sept. 22—Oral argument before the Board in Reopened Southern Service to West Case. Washington, D. C. Docket 1102 et al.

Sept. 28—Hearing in Ozark Air Lines Renewal Case. Tentative. Washington, D. C. Docket 5988 et al.

Sept. 30—Hearing in Bonanza Air Lines Renewal Case (Civic Intervenors). Las Vegas, Nev. Docket 5773 et al.

Sept. 30—Hearing resumed in Williston Basin Area Case (Airline Parties). Washington, D. C. Docket 5777 et al.

INTERNATIONAL AVIATION

Edited by Anthony Vandyk

INTERCOM

The London-New Zealand air race starts on October 8. Of the 16 entries only four are from outside the British Commonwealth—one from the Netherlands and three from the United States. Indications are, however, that two of the U. S. entries—a B-45 jet bomber and the Custer channel-wing aircraft—will be non-starters. The only U. S. starter is likely to be a Lockheed 18 entered by Rausch Aviation.

The line-up will probably be as follows: aircraft entered by the military —five Canberra jet bombers (three RAF and two RAAF), one Valiant jet bomber (RAF), and one Hastings transport (RNZAF); military planes entered privately—one F-51 Mustang and two Mosquito 41's; civil aircraft—one DC-6A (KLM), one Viscount (BEA), one privately-owned DC-3, and Rausch's Lockheed 18. The Hastings, DC-6A, Viscount, DC-3, and Lockheed 18 are entered in the transport handicap section of the race, the other aircraft in the speed section.

It is regrettable that there is no participation by U. S. jet bombers or fighters and that the Constellation and Super Constellation are unrepresented. Even more regrettable is the absence of the Comet, in view of the fact that the England-Australia race of 1934, the only past event comparable with this year's 12,000-mile race, was won by an earlier de Havilland aircraft named Comet—a twin-engine racing plane.

KLM's presence in this year's race stems from the fame (and publicity) the Dutch airline gained for itself and for the DC-2 by taking second place in the 1934 race. The DC-2 then was just about as revolutionary as the Viscount is now, and BEA's entry (actually the prototype Viscount 700 loaned by Vickers) will undoubtedly attract much attention, particularly in view of two distinguished crew members—BEA chief executive Peter Masefield and parliamentary civil aviation secretary J. D. Profumo. The other Vickers aircraft in the race—the four-jet Valiant bomber —should also win much interest, since it will make only two refueling stops (at Karachi and Cocos), two less than the other turbojet planes in the race, the twin-engine Canberras.

Comet II, shown above, made its first flight on August 27. This is the first production aircraft; a Comet I airframe with Avon instead of Ghost engines was used as the prototype. The Comet II is three feet longer than the Comet I. The 30% increase in power puts the gross up to 120,000 pounds and the capacity payload up to 13,500 pounds.

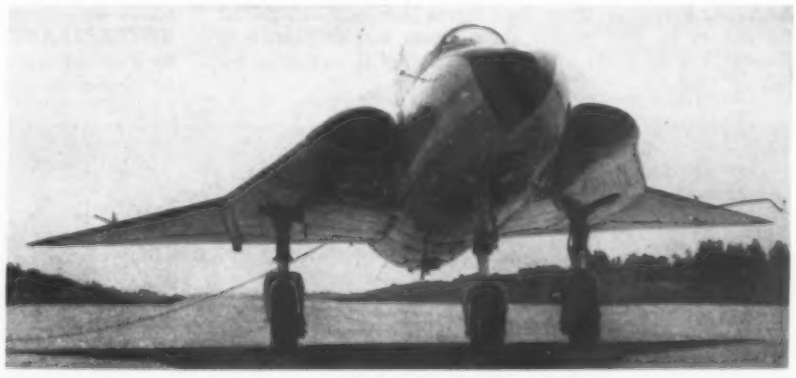
Korean Carrier Plans Trans-Ocean Service

Latest carrier to plan trans-oceanic service is Korean National Airlines, which recently contracted with Air Carrier Service Corp., Washington, for a DC-4 and a Hiller helicopter. KNA plans to buy another DC-4 soon and then one or two Super Constellations so as to transform itself from a domestic operator (with three DC-3's) to an international carrier serving San Francisco, Tokyo, and Hong Kong.

KNA president Y. W. Shinn told AMERICAN AVIATION during a recent visit to Washington that the carrier would start trans-Pacific operations before the end of the year, subject to getting a CAB foreign air carrier permit by then. KNA will not join IATA, and thus may charge a different rate from IATA members flying between the Orient and the U. S. and using equipment superior to the carrier's 48-seat DC-4.

Test Stretched DC-3

A model of a proposed stretched-fuselage version of the DC-3 is now undergoing wind tunnel tests in Australia. The design was created by Ansett Airways and tests are being conducted by the Australian Department of Supply's aeronautical research laboratories at Fishermen's Bend in association with the carrier. Modifications include lengthening the fuselage by 39" and fitting a Turbomeca Palas jet for take-off assistance.



SAAB-210 Draken "double delta" research aircraft now has a new nose for high-speed test work. Plane has made over 400 flights. Sweden's next new fighter will reportedly be a development of the Draken.

INTERNATIONAL AVIATION

MANUFACTURING

FRANCE: Hurel Dubois HD 31 transport prototype is expected to be certificated shortly. It was recently grounded to enable modifications to be made for the improvement of low-speed performance.

Breguet is building a batch of concrete wings for the British Supply Ministry.

A Dassault Mystere is now flying with a Hispano-Suiza Verdon (improved version of the Rolls-Royce Tay).

BRITAIN: A. V. Roe is working on a design for a compound-engine patrol bomber, basically a new version of the four-engine Shackleton with Napier Nomads instead of Rolls-Royce Griffons.

Decca has developed a lightweight (15 pounds) version of the Decca Flight Log for use as a navigational aid in fighters, helicopters, and small aircraft.

A strong foam plastic compound known as Sebalkyd is being manufactured by Imperial Chemical Industries for filling the shells of aircraft fuselages. The new high-speed towed target built by Air Service Training has its fuselage filled with this compound.

Saunders-Roe has produced a pulse-jet of 45 pounds static thrust. Weighing 15½ pounds, it is 47.5″ long and has a maximum diameter of 5.5″. A larger, 120-pound thrust model is under development.

ARGENTINA: A Twin-Beech replacement has been developed by the IAME military aircraft plant near Cordoba. Designated AI-35, it is powered by two Argentine-designed-and-built El Indio 650-hp engines.

SWITZERLAND: N-20 fighter prototype is now being readied for flight tests. Design features exceptionally good handling qualities at low speed (down to 185 mph) and in turns.

AUSTRALIA: Aircraft rockets for offensive purposes and for take-off assistance have been ordered by the Australian defense production authorities from British Tube Mills (Australia) Pty. Ltd. of Adelaide. Order is worth $1,125,000.

CEYLON: Interest in the Boulton Paul Balliol trainer has been shown by the defense authorities.

TRANSPORT

BRAZIL: Panair do Brasil now serves Hamburg as terminal for one of its four weekly flights from Rio de Janeiro to Europe. Carrier plans to inaugurate Comet II service in the fall of 1954.

Panair do Brasil has bought an L-49 Constellation from Pan American World Airways to replace an aircraft lost in a crash in June.

Aero Geral has been merged with Varig, which takes over the Santos-Rio de Janeiro-Natal route.

ASIA: SAIDE has resumed operations and now flies DC-4's from Cairo to Beirut and to Tripoli and Tunis.

Civil Air Transport is seeking Middle East charter contracts involving flying pilgrims to Jedda (nearest airport to Mecca).

Union of Burma Airways lost one of its Handley Page Marathons in a crash at Myaungmya on August 5.

Iraqi Airways has bought a Vickers Viking from British European Airways.

ITALY: Alitalia reports a net profit of $280,000 for 1952 against a loss of $2,000 for 1951.

LAI now operates a family fare plan on its Rome-Cagliari domestic route.

BRITAIN: BEA has shelved a proposal to put a small amount of pressurization in its fleet of DC-3's.

AUSTRALIA: BCPA and Qantas Empire Airways plan to switch to radiotelephony as soon as practicable. Flight radio officers of both companies have threatened to strike unless assured employment.

First family-fare plan in Australia has been introduced by Ansett Airways. There is a reduction of 10% to family groups traveling on Tuesdays, Wednesdays, and Thursdays.

Australian National Airways will retain its partnership interest in Air Ceylon despite the latter's suspension of long-distance services.

FRANCE: UAT will start service to Johannesburg on October 1.

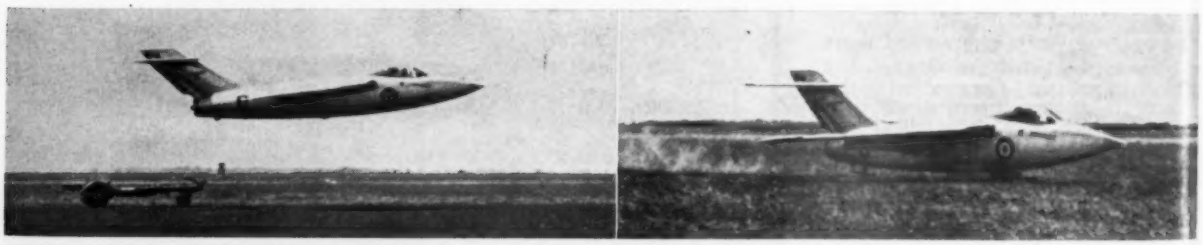
Air France has now received all of its three Comet 1A's, three of its 12 Viscounts, two of its 10 Super Constellations, and four of its 12 Breguet Deux Ponts.

MILITARY

INDIA: First of 72 Dassault Ouragans for the Indian Air Force will be delivered this month. Indian pilots have arrived in France for training.

French Navy is interested in the HD 33, assault transport version of the Hurel Dubois HD 32. Air Force shows little interest.

SWITZERLAND: Swiss Air Force officers were impressed by a demonstration of the Morane-Saulnier MS 755 Fleuret jet trainer in Switzerland.



Accelerated test flight program is now being given SNCA du Sud-Est's SE 5000 Baroudeur. Stripped-down fighter has so far taken off without the use of its take-off trolley's rocket power. Using just its Atar 101, the plane is airborne after a run of about 3,600 feet. After separation, the trolley runs on for about 1,000 feet but does not swerve. Baroudeur lands smoothly on its skids, according to its test pilot.

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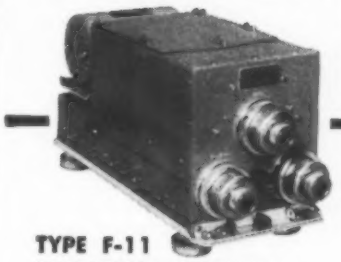

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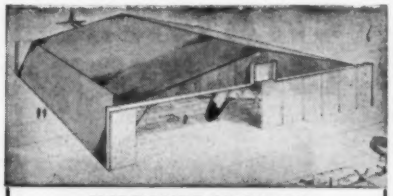

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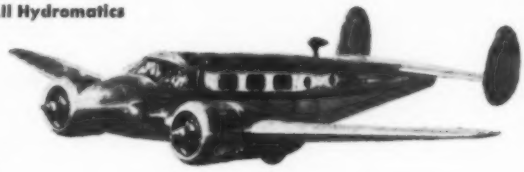

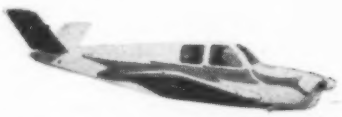

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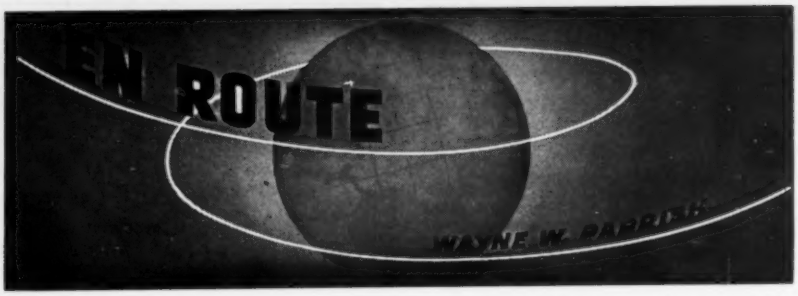

Smuggling. Taking up where we left off last issue, the tiny (140 square-mile) international zone of Tangier in the extreme northwest corner of Africa is largely known today for its free currency exchange and its smuggling.

I can dispose of the smuggling angle right off. The reputation isn't deserved today. There are a few ships which load up in Tangier harbor regularly, and engage in smuggling, but the traffic has dropped off sharply in the past year or two. Residents of Tangier resent the smuggling talk, because everything is actually legal there, and they dismiss the implication of illegality because the activity takes place somewhere else and the boats only load up there.

It's rather a fine point they make, but the truth is that there's not much money any more in smuggling cigarets or other products into European countries because most shortages have disappeared. But I saw several boats now used in smuggling sitting in the harbor and I was introduced to the captain of one who was about to sail. He was a truly tough character having a night at a bar before taking off.

But compared to the rackets of New York and Chicago, the smuggling originating at Tangier is simply peanuts. It sounds big because it makes for good readable newspaper columns and the locale is Africa. But it really isn't a big business by New York harbor standards.

Plenty of Banks. But when it comes to banks, brother, take your pick. Without any fear of contradiction, Tangier can claim more banks per capita than any other spot in the world. There are about 20 banks of considerable size, which is a lot for a town of 150,000, and there seem to be a million smaller banks and money changers. No doubt about it, vast sums of money change hands in Tangier all the year 'round.

I found out all about it by talking to a couple of the leading bankers. Here it is in capsule form: there is nothing new or unusual about the huge banking business in Tangier. Everything that takes place in Tangier once took place in the early 20's and before in all major cities of the world. The novelty is that today, due to two world wars and vast economic upsets and the placing of government controls everywhere, Tangier is the only spot left in the world carrying on financial transactions in a completely free market, such as existed everywhere in the world before 1925.

Only Tangier is Free. So instead of engaging in something illegal or sinister or new, Tangier simply remains as a souvenir or survivor of the days when free money exchange existed everywhere. Today in Tangier you can exchange any kind of money for any other kind. You can buy or sell gold here. No restrictions of any kind. There's nothing else left in the world like it. Tangier banks have close financial connections with all other banking centers on the globe.

Right now Tangier is in the midst of a business slump, but that doesn't seem to bother the big bankers. They are in business for the long pull and all they have to do is to wait for another period of world tension. Tangier banking prospers when there's threat of trouble. Then the big moneybags of the world scurry to Tangier—or cable—to convert their securities into gold. When peace prevails, gold is too expensive to keep and it's converted again into securities or investments of one kind and another.

So you may be interested in the simple fact that in July, in Tangier, things were mighty quiet. Plenty of financial transactions, as usual, but no boom resulting from fear of an imminent world crisis. Business generally, in fact, was pretty bad. I was one of seven guests registered in the leading hotel. Other hotels were doing worse. Bars were empty. Not a nightclub was open. Merchants were crying the blues. All of which means that Tangier today is a tourist paradise with plenty of hotel rooms and a welcome from the bartenders offering reasonable prices.

Good Climate. Two and three years ago Tangier was booming and there were expensive nightclubs and the bars were full and hotel rooms hard to get. Evidently a lot of people thought war was imminent or that Korea would spread. I'm told that Tangier was very expensive then.

Everywhere in the area of Tangier it's very hot in July. Morocco is especially hot. But Tangier enjoys a delightful climate the year 'round and I was never the least bit warm except while walking up and down hill in the middle of the day. There was a fine breeze all the time. It rains infrequently and is never cold, but sometimes during the year it gets a little windy.

There are two kinds of taxis in Tangier, regular and "chicotax," little European cars which charge less and scoot around like bugs. While I was there the chicotax were installing two-way radios and so much chattering between driver and central control you've never heard.

Most any Language. The language is usually Spanish, since there seem to be more Spaniards than any other people except Arabs, who comprise 50% of the population. But Tangier is multi-lingual. French, English, and Arabic are used along with Spanish, and I heard a banker use all four one after the other in talking over the phone and to his clerks and to me. It's common to hear English, French, and Spanish expressions in the same sentence. "Okey" is standard for everybody.

When it comes to money, everybody will take almost anything. The Spanish peseta is the prevailing currency for most shops and restaurants. Prices are usually in Spanish pesetas. But you can buy in French francs or American dollars, also, and if anybody wants something you don't have it's never more than a few feet or yards to a moneychanger or bank. Everybody seems to be razor-sharp in converting one currency or price into another.

Both the French franc and the Spanish peseta were selling at a considerable discount from their official prices in France and Spain, so anyone traveling to those countries can do pretty well by buying those currencies in Tangier. It's legal, up to a certain amount. Or you can buy by letter or cable and receive the money by official government telegraph or in letters.

But the savings are not nearly so great now as they were last year and earlier. You can do almost as well on the black markets in France and Spain. There are few other savings to be made in other world currencies, in contrast to the period right after the war.

VIEW OF THE KASBAH reveals no banks, but Tangier has more than its share.

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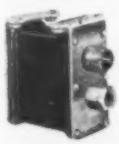

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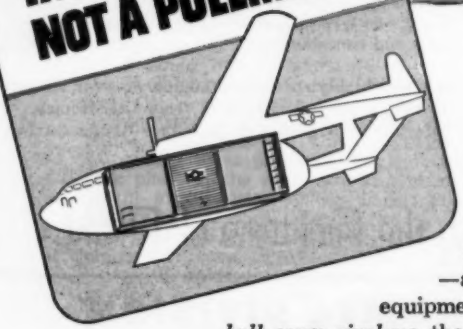
FREIGHT TAKES A BOXCAR... NOT A PULLMAN!



At far-flung bases from Alaska, Korea, and French Indo-China, Fairchild C-119's are delivering cargoes that no other plane could unload in such tight spots. The "Flying Boxcar" was built to land on fields too rough for other planes —at points where no freight-handling equipment exists. Designed specifically as a *bulk cargo airplane*, the C-119's twin boom provides ample clearance for trucks to back up to the wide-open doors and for vehicles to "roll out" on their own power, without use of cumbersome equipment and with a minimum of manpower and time. Here is a combat proven airplane . . . that loads and unloads itself . . . no special equipment needed!

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News at Deadline

First-Class-by-Air Plans Announced

Plans for experimental carriage of first class mail by air between New York and Chicago and Washington and Chicago were announced September 8 by the Post Office Department, and one scheduled air line and two certificated freight lines immediately stated that they are willing to transport such mail at rates proposed by the Post Office.

These rates—18.6¢ per ton-mile for New York-Chicago and 20.4¢ for Washington-Chicago were considerably below proposals that had been made to the P. O. by scheduled air lines. However, United Air Lines, Slick Airways, and The Flying Tiger Line accepted. The remainder of the air lines had not acted on the plan at press time.

The Post Office, which had obtained an opinion from the Comptroller General that the carriage of first class mail by air was legal, stated that the overall expense of the 1 year experiment would not exceed what it would cost to transport this mail by railroad.

Slick and F. T. L., not now certificated to carry mail, asked CAB for "whatever authority, if any, may be necessary" for them to participate in the experiment. They said this could be done by treating mail as "property," giving them a temporary exemption, or allowing them to contract with the P. O. Objections to their participation are expected from the scheduled air lines.

The P. O., in asking CAB to find that the proposed rates are fair and reasonable, said they should apply to service performed "between these points by any air carrier now or hereafter authorized by certificate of public convenience and necessity, or otherwise, to engage in the air transport of mail between said points."

According to P. O. estimates, there are 10 tons of first class mail moving daily in each direction New York-Chicago, 3½ tons Washington-Chicago, and six tons Chicago-Washington.

First class mail will be transported on a "space available" basis, within certain time limits which have not yet been established. The P. O. said it will use the services of all "authorized" air lines willing to participate.

The P. O. proposal was made to United, TWA, American, Capital, Transport Air Group, Aircoach Transport Assn. and Independent Military Air Transport Assn. The latter 3 groups are composed mostly of non-scheduled carriers.

New Records Mark Dayton Air Show

Highlighting the National Aircraft Show at Dayton, Ohio, were the announcements of new world aircraft records set by the USAF a few days previous. Among the new marks:

• **100 kilometers closed course:** 690.118 mph, by Brig. Gen. J. Stanley Holtoner September 2 in a North American F-86D. Former record, 652.552 mph.

• **15 kilometers straightaway:** 707.889 mph, by Capt. Harold E. Collins, September 1 in another F-86D. Former record, 675.47 mph.

• **Helicopter altitude record:** 22,289 feet, by Capt. Russell M. Dobyns, September 2 in a Piasecki YH-21. Former record, 21,220 feet.

• **Helicopter speed record (3 kilometers):** 146.735 mph, by Captain Dobyns, September 4 in a YH-21. Former record, 129.552.

Winners of the three major speed events, aircraft used, and their times were:

• **Thompson Trophy:** Holtoner in an F-86D at 681.576 mph. Former record, 628.698 mph.

• **Allison Trophy:** Capt. Forrest Wilson in a Republic F-84G at an average speed of 537.802 mph between Indianapolis and Dayton.

• **Bendix Trophy:** Maj. William T. Whisner, Jr., in a North American F-86F, averaging 603 mph between Edwards AFB, Calif., and Dayton in record time of 3 hours, 5 minutes, and 45 seconds. Former mark, 3 hours and 27 minutes.

McDonnell to Build Photo Version of F-101

McDonnell Aircraft Corp. was awarded an Air Force pre-production contract in March calling for tooling and engineering in preparation for producing RF-101A photo-reconnaissance jet fighters, the company reveals in its annual report. Dollar value of contract is not disclosed.

The order is in addition to an AF production contract awarded last year for an undisclosed number of F-101 Voodoo strategic twin-jet fighters. Earnings for fiscal year ended June 30 totaled $4,234,301, or $6.18 per share. Backlog June 30 was $496,902,953. Year's sales added up to a record $133,531,474.

New Aircraft Shown At Farnborough Show

New planes on display at England's annual SBAC Farnborough aircraft show this year included the Olympus-powered Mark 2 Vulcan, which will be the production version; the prototype Mark 3 Bristol 173 helicopter (a Mark 2 fitted with stub wings); the Sapphire-powered Mark 2 Hunter; Canberras using Olympus and Avon RA14 (9500-pound-thrust) engines; the Short SB 6 Sea Mew, with a single Mamba, for anti-sub work from escort carriers; the Mark 4 Swift with afterburner-equipped Avon. The production Comet 2 did not appear.

Included in the static display were the DC-3 replacement design projects of Handley Page and Aviation Traders. There were also models of various large helicopters, including the Percival P.87 (two Napier turbines) and a twin-rotor Saunders-Roe model.

Boeing Jet Transport Prototype on Schedule

Boeing Airplane Co. has completed 12-months' work on its jet prototype which will fly next August, on schedule. The prototype will cost Boeing $15 million up to the time of its first flight. Neither military nor civilian contracts have been awarded, but some of the airlines, as well as the Air Force and Navy, have expressed interest in the protoype.

Few Personnel Changes at Chase

The Kaiser-acquired Chase Aircraft Co. and the newly created Stroukoff Aircraft Corp. will exist side by side at West Trenton, N. J. Chase will continue in business with largely the same roster of officers as before Michael Stroukoff's departure to start his own company (see page 17).

Only administrative changes are the naming of Herman C. Wieben, former chief project engineer, to succeed Stroukoff as chief engineer, and of W. A. Cannon, former administrative manager, as treasurer to succeed J. X. Cousins. Chase retains the two Navy-owned hangars, while Stroukoff's new company has moved into the portion of the Mercer-county-owned Hangar 6E which Chase formerly occupied.

EPT Extension to Cost Industry $26½ Million

The six-month excess profits extension will cost the 16 major aircraft manufacturers about $26.5 million, according to an AMERICAN AVIATION survey. Total fiscal 1953 excess profits taxes will probably exceed $53 million, compared to the estimated $39.8 million total for fiscal 1952. Had the tax been allowed to die, the manufacturers still would not have benefited, because of the reduced earnings caused by AF cutbacks.

P&W Withdraws T34, Commercial Turboprop

The commercial version of Pratt & Whitney's T34 turboprop has been withdrawn from commercial sale "until a market of sufficient magnitude has been developed to make its commercial manufacture economically feasible," the firm has announced.

Designated the PT2F-1, the engine has been featured in Lockheed's plans for an L-1249 version of the Super Constellation, and Douglas has reportedly designed a DC-9 using the engine. Quantity production of the military model is due to begin in 1954.

Orenda-Powered Sabre Flies

First production model of the Canadair-built Orenda-powered Sabre 5 was flown recently for the first time. Plane is only gradually being phased into F-86E production line at Canadair and it will be some time before it will be turned out in quantity.

The Orenda 10, with more than 6000 pounds thrust, gives the Sabre improved take-off and climb performance.

Aircraft Unions Hold Strategy Meeting

Key officials of the International Association of Machinists and the United Auto Workers met in New York in a precedent-shattering meeting early this month in a show of unity on forthcoming contract negotiations with United Aircraft Corp. Two major issues dominated the meeting: (1) sharp improvement of "sub-standard" contract conditions at all UAC plants, and (2) launching of simultaneous organizing and reorganizing drives.

Similar regional talks are planned for the south, midwest, and west coast where IAM-AFL and UAW-CIO aircraft representatives will map strategy for correlated action in 1953-54 contract talks coming up with U. S. aircraft manufacturers.

A spokesman for United Aircraft observed that "the very contracts the IAM-UAW are so busy castigating are those which the union's organizers proudly described as 'good contracts' when they were negotiated."

Beam-Riding Rockets Revealed in Britain

Indication that Britain may now have 2000-mph rockets capable of outmaneuvering any piloted aircraft has come from Supply Minister Duncan Sandys (see photo, page 17). He hinted that British guided missile development includes rockets with auxiliary boost motors, which rapidly accelerate the missile up to its full supersonic cruising speed and then are automatically dropped off.

Sandys said no piloted plane could hope to outmaneuver new guided rockets capable of high-speed twists and turns creating intense strains and pressures that neither the human body nor the wings of an aircraft could withstand. Plastic materials are being developed for use in missiles which will not only reduce weight without loss of strength but will also cut cost.

Sandys mentioned "beam-rider" and "homing" rockets. The former fly up a radar beam which follows the target automatically and is operated from the ground; even at long ranges these rockets can keep themselves within a few feet of the center of the beam. The "homing" rockets, once launched, lock their guidance mechanism onto the enemy plane and without further assistance from the ground steer towards the target, changing course as necessary. Unlike the ground-controlled "beam riders," their accuracy is not affected by distance.

FitzGerald to AOB Post

CAB has named Joseph H. FitzGerald director of its air operations bureau to fill the vacancy caused by the resignation of Gordon M. Bain. Previously FitzGerald headed the Board's Alaska Office. He is a lawyer and economist.

C-130 Subcontracts

Lockheed Aircraft Corp. has awarded first major subcontracts for C-130 turboprop transport production to Avco Manufacturing Corp.'s Crosley Division and to Rohr Aircraft Corp. Avco will build tail assemblies and Rohr will produce turbo-prop "power packages."

Non-Sked Group Takes Fight to Supreme Court

North American Airlines has taken its fight against CAB enforcement hearings to the U. S. Supreme Court after failing to get an injunction in the U. S. Court of Appeals early this month. The non-scheduled airline group wants the Supreme Court to stay CAB hearings pending review of an appeal. The CAB hearings have been recessed since June 23 because of the court fight.

Boeing Creates New Planning Group

Boeing Airplane Co. has set up a planning committee which will direct policy for engineering and sales. Headed by Edward C. Wells, vice president for engineering, who will be responsible for research, development, and appraisal of customer needs, the group includes vice presidents John O. Yeasting, finance; Fred P. Laudan, manufacturing; and James E. Prince, administration.

Federal Airways Budget Allocated

The $7 million fiscal 1954 budget awarded to CAA's Office of Federal Airways will be allocated as follows: $1,924,000 for installation of four airport surveillance radar units; $633,000 for 14 omnirange installations at terminals; $1,433,000 for combining communication stations and control towers at 33 locations; $3,001,000 will go toward relocation of ILS and VOR where needed and for radar modifications.

No locations or bid invitations have been decided upon as yet.

ATA Airline Pilots Checked Out for S-55

Under program worked out by Air Transport Association and Sikorsky Aircraft Division of United Aircraft Corp., three airline pilot members of ATA helicopter committee have been checked out to fly the Sikorsky S-55 helicopter. Pilots H. J. Reid of Capital, Byron Moe of Allegheny, and A. A. Lane of Northeast recently completed a week-long indoctrination in helicopter flying at Sikorsky.

The ATA helicopter group has met to discuss its future activities and review CAB proposed transport helicopter regulations. New committee members announced by ATA are engineering vice presidents W. W. Littlewood of American Airlines, and J. A. Herlihy of United Air Lines, economic specialist J. E. Moore of UAL, and traffic representative Nelson Frye of Capital.

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Pioneer Airliner–1919

The Lawson Airliner was built at Milwaukee, Wisconsin, in 1919 with V. J. Burnelli (left) in charge of design and construction. Designed to carry 26 passengers, it was the first airliner developed after World War I that was not based on a converted bomber design. And today, Burnelli is still vitally interested in aviation. His "Loadmaster" design, developed on the "lifting body" principle, illustrates his contention that the load carrying body of an air transport should not only provide a minimum resistance to flight, but should also contribute to its own support. Burnelli has built nine versions of this evolution in modern airplane design . . . all of which have flown successfully.

Petroleum research has kept pace with the pioneering of new aircraft designs—for like any engine, an airplane engine can only operate within the limitations of the fuel that powers it.

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THE SUPER-CONSTELLATION

Commercial flying has come a long way since the days when the Lawson Airliner first took to the air. Of the nineteen major airlines in operation in the U. S. today, TWA-Trans World Airlines alone maintains a fleet of planes consisting of 10 Super Constellations, 68 Constellations, 40 Martin 4-0-4's, 12 Martin 202A's and 13 DC-4's—and employs a total of 1168 licensed pilots.

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